UNITED STATES POSTAL SERVICE SPECIFICATION:
VEHICLE, CARRIER ROUTE, RIGHT-HAND DRIVE

DRAFT

U.S. POSTAL SERVICE ENGINEERING
8403 Lee Highway
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January 20, 2015

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UNITED STATES POSTAL SERVICE SPECIFICATION VEHICLE, CARRIER ROUTE NEXT GENERATION, RIGHT-HAND DRIVE 680 KILOGRAMS (1,500 POUNDS) PAYLOAD CAPACITY MINIMUM, 4.38 CUBIC METERS (155 CUBIC FEET) CARGO CAPACITY MINIMUM

1 SCOPE

1.1 Scope

This specification covers new commercially manufactured right-hand drive vehicles having a minimum of 4.38 cubic meters (155 cubic feet) cargo stowage capacity, and a minimum rated payload capacity of not less than 680 kilograms (kg) (1,500 lbs.). Unless otherwise specified, the body shall be constructed of any combination of aluminum alloy, plastic, or composite materials having the necessary structural characteristics to provide the level of service and life expectancy detailed in this specification. The body shall have a design goal of attaining a 20-year vehicle life cycle. The power train shall have a design goal of a minimum life expectancy of 12 years while withstanding the unique rigors of its intended use (see section 6.1).

1.2 Background

The USPS operates over 200,000 vehicles in all areas of the United States and its territories. More than 160,000 of these are right-hand drive vehicles that need to be replaced with the Next Generation Delivery Vehicle (NGDV). The potential also exists to replace the other 20,000 plus left hand drive vehicles with the NGDV along with adding this vehicle to the 30,000 plus rural routes that use their own vehicle to deliver.

The desire is to design a vehicle in which the operator's relationship with the mail delivery and vehicle operating tasks are the foremost concern of the NGDV design. The specifications for the NGDV concentrate on the design aspects of the driver-vehicle relationship and the changing mail make up with the reduction in the traditional letter and flat volume and the increase in parcels. This methodology is the result of past experience that has necessitated a vehicle that is more ergonomically correct than previous carrier route vehicles and allows for the needed space to organize and stow parcels for the growing parcel business.

Other changes in this specification from past Long Life Vehicles (LLV) specifications reflect a desire to purchase vehicles that result in a reduction in maintenance costs over the life of the vehicle. This specification represents minimum requirements throughout the life of this acquisition program. It is expected that over the life of this project, continuous improvement of vehicle components, major and minor, will be considered with advances in vehicle technology. The program will be a three-phase effort. The first phase will be for interested suppliers to provide a proposed vehicle that meets the following specifications. The second phase will be the award of a contract for a select few suppliers to build and provide five prototype vehicles. These vehicles will be tested for user acceptability, durability, and conformance to the requirements. The third phase will be the selection of a winning design and the procurement of a fleet of those vehicles.

Various vehicle usage and design issues have driven maintenance costs, reliability and durability for the existing vehicle fleet--principally the LLVs. These key "lessons-learned" through the USPS' experience with existing vehicles, offer suggestions for how the vehicle design might be improved or tailored for the unique conditions and environment in which right hand drive mail delivery vehicles are operated. This listing of observations is being offered to potential suppliers for informational purposes only—and any suggestions related to materials use, assembly, design or any other vehicle characteristics should not be considered as mandatory or required. Many of the observations and suggestions may be unique to the LLV design and therefore not applicable or relevant to other vehicles.

Nevertheless, suppliers are encouraged to consider these suggestions and observations as they proceed with finalizing their vehicle designs.

- Historically, the highest rate of body damage has been to the front door, fender, and grill components, resulting in frequent replacement of these body panels. Repair of larger body panels (i.e., roof, rear quarter panels) requires excess labor and the use of highly specialized tools. Optimal vehicle body design and construction would allow body panels to be repaired or replaced easily, especially in the areas that have a high potential for accident damage.
- Vehicle doors experience high cycles of opening and closing, which can result in stress- related failures if the door design is not rigid enough. Door components (i.e. locks and latches) that can withstand the rigors of the postal duty cycle and are designed for easy replacement would be favored. Similarly, windows experience a high duty cycle, which resulted in a retrofit of the window regulator on the existing fleet. Durable window components would therefore be favored, as well.
- The USPS would prefer remote lock and ignition components that demonstrate a level of durability and reliability resulting in a reduced maintenance cost, compared to the maintenance cost of the current manual lock cylinder design, while providing increased security.
- Windshield leaks are common, and replacement requires excess labor. A method of installation eliminating the potential for leaks would be favored, as well as replacement procedures using approved and accepted industry methods.
- On existing vehicles, windshield wipers have experienced fatigue around the wiper pivot, due to snow loads and extended use, and the assembly must frequently be replaced due to failure of individual components. Additionally, premature wear of pivots and linkages requires that the wiper motor exert excessive force. The windshield wiper design could be improved with components that efficiently accommodate the wiper blade size and extended use, without creating stress on the body mounting areas or requiring increased effort from the motor.
- Camera and monitoring system components will be exposed to a range of environmental conditions and vehicle dynamics. The USPS would prefer that components be selected and mounted in a manner that will help reduce maintenance costs and failures, (perhaps through mounting systems that reduce vibration and/or allow for easy component replacement).
- Mail can be inadvertently dropped into small crevices and areas inside the driver compartment that are difficult to access. Eliminating such crevices is desirable.
- Due to repeated ingress and egress by the mail carrier on most delivery routes, the step well is prone to high wear. A heavy-duty slip-preventing design would be favored.
- Because the cargo area is not climate-controlled and the window must frequently be opened on most delivery routes, heating and cooling of the vehicle's driver's compartment is most effective if concentrated on the driver. Measures including an appropriate insulation package, as well as directing the heating and cooling provisions in the right quantities to the right body locations would be preferred. Heater and ventilation cables designed for extended life and ease of operation would also be preferred (These have been high maintenance items on the existing fleet). Simply putting a fan on the dash does nothing but to circulate hot air that is already in the cab area. Perhaps an opening vent on the driver's side fender, similar to those in previous years would be of more value if air conditioning is not installed.

- Vehicle fires have been attributed to electrical component failures in high current circuits including switches or controls (i.e. ignition switch, headlight switch, heating system blower motor control, etc.) without adequate protection. Easily replaceable and protected relays would be preferred for these applications in order to reduce current flow through these devices.
- The USPS would prefer that lamps and lamp assemblies be of a common design and available from multiple suppliers.
- The postal duty cycle subjects front suspension and steering components to extreme driving and maneuvering conditions. Zerk grease fittings would be favored, to ensure proper lubrication for ball and socket type joints.
- Tire scuff and wear has been a significant problem on the existing vehicles. The front suspension and tire alignment geometries should be designed to ensure proper tire-to- road contact and minimize wear while taking into consideration the comparatively high frequency but low speed of turns typical of carrier route service.
- The USPS favors a service brake system that would sufficiently distribute braking force between front and rear axles under anticipated loading conditions for the NGDV vehicle to provide the greatest braking effectiveness and reduce wear on both front and rear brakes.
- The USPS would prefer that the parking brake system provide reliability and ease of operation and maintenance. For example, engagement effort by the operator to achieve sufficient holding strength should be minimized. Cables designed for extended life would also be preferred for controlling the parking brakes. Additionally, the USPS would favor a parking brake system that minimizes rollaway occurrence (rolling of vehicle that occurs if operator neglects to engage the parking brake), so long as reliability and ease of maintenance issues are addressed. For example an “intelligent” braking system might apply and release the parking brake automatically.
- The exhaust system experiences high damage from corrosion as well as impacts with curbs and other obstacles, and the USPS would prefer a design that reduces the potential for such damage. For example, routing the exhaust system along the left side of the vehicle would keep heat away from driver's side of the vehicle, and may extend the life of the exhaust system by placing metal components further away from the gutter/curb where rain water, melted snow, and salt collect. Left-rear side discharge is required.
- Additional rust protection for the chassis in the areas of the rear spring hangers and body mounts would be favored. Galvanic corrosion resistance should also be of high consideration when designing mounts throughout the vehicle. For example, a good practice would be to fabricate inner fenders that mount to an aluminum body out of aluminum, composite, or plastic. If mounted to the chassis, radiator supports are likely to be made out of the same material as the chassis, isolating measures could be used if the radiator is of a dissimilar metal.
- Damage due to curb strikes and ice buildup can be common. Flexible skirts at the rear of the front tires would help prevent this kind of damage. While the NGDV vehicle specifications require that vehicle track widths be similar, suppliers should be aware of this historical problem.
- In winter environments vehicles are to a degree driven through snow banks. Vehicle design should be such that critical components, such as the cooling system, are not damaged if the vehicle is driven through snow banks, assuming the

snow is not above the front bumper.

- The USPS would prefer components that demonstrate extended life and performance (i.e. polyurethane as opposed to rubber for bushings and mounts).
- Features that significantly reduce labor time required for preventive maintenance procedures will receive extra consideration (i.e. fuel filter system that uses a canister spin on type filter, easily accessible and of low cost)

2 APPLICABLE DOCUMENTS

2.1 Government Documents

The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein:

SPECIFICATIONS

Military*

MIL-L-2105 C (Metric)	Lubricating Oil, Gear, Multipurpose

*Note: Copies of Military standards may be obtained from the Defense Printing Office, Customer Service Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

Federal

FED-STD-595	Colors Used in Government Procurement

STANDARDS

Pantone* Color Specifier 1000	Red Pantone 485C
	Blue Pantone 294C

*Note: Pantone Color Specifier may be obtained from Pantone Inc., 55 Knickerbocker Rd, Moonachie NJ, 07074-9998, Telephone (201)935-5500.

United States Postal Service (USPS)*

USPS-STD-7B	Mailboxes, Curbside
USPS-V-1267	Vehicle Lock Cylinders and keys
USPS-S-1087	Sheeting and Printed Markings, Retro- Reflective

*Note: Copies of USPS specifications and drawings may be obtained free of charge from the U.S. Postal Service, Engineering, 8403 Lee Hwy FL 4 Merrifield, VA 22082-8101, Telephone (703)280-7002

OTHER PUBLICATIONS

U.S. Department of Transportation (DOT)

49 CFR, Part 393*	Parts and Accessories Necessary for Safe Operation
49 CFR, Part 571	Federal Motor Vehicle Safety Standards (FMVSS)

*Note: The Code of Federal Regulations (CFRs) and the Federal Register (FR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9999. When indicated, reprints of certain regulations may be obtained from the federal agency responsible for issuance thereof.

U.S. Environmental Protection Agency (EPA)

40 CFR, Part 85	Control of Air Pollution from Motor Vehicles & Motor Vehicle Engines

State of California

Vehicle Code of California*

*Note: Application for copies should be addressed to the Department of Motor Vehicles, 2570 24th Street, Sacramento, CA 95818-2599.

2.2 Non-Government Documents

The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American National Standards Institute (ANSI)*

ANSI-Z26.1/SAE-J674	Safety Glazing Materials for - Motor Vehicles and Motor Vehicle Equipment

*Note: Copies of ANSI documents may be obtained from the American National Standards Institute, Inc., 11 West 42nd Street, 13th floor, New York, NY 10036.

American Welding Society*

WHB-1 through WHB-5	Welding Handbooks (use as applicable)

*Note: Copies of AWS documents may be obtained from the American Welding Society, Inc., 550 N.W. LeJeune Road, P.O. Box 351040, Miami, FL 33135.

MIT Press*

Humanscale 1/2/3, 4/5/6, 7/8/9

*Note: Copies of MIT Press documents may be obtained from the MIT Press, 8000 Market Street, Third Floor, Boston, MA 02205.

Society of Automotive Engineers (SAE)*

SAE J198	Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles, Recommended Practice SAE J293Truck and Bus Grade Parking Performance Requirements, Recommended Practice
SAE J381	Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles, Recommended Practice
SAE J537	Storage Batteries, Standard
SAE J551	Performance Levels and Methods of Measurement of Electromagnetic Radiation from Vehicles and Devices (30 - 1,000 MHz),

	Standard
SAE J553	Circuit Breakers, Standard
SAE J573	Signal and Marker Light Sources Standard
SAE J589	Turn Signal Switch, Standard
SAE J593	Backup Lamps (Reversing Lamps), Standard
SAE J638	Motor Vehicle Heater Test Procedure, Recommended Practice
SAE J683	Tire Chain Clearance - Trucks Buses (Except Suburban, Innercity, and Transit Buses), and Combinations of Vehicles, Information Report
SAE J826	Devices for Use in Defining and Measuring Vehicle Seating Accommodation, Standard
SAE J914	Side Turn Signal Lamps, for Vehicles Less Than 12 M in Length Standard
SAE J941	Motor Vehicle Drivers' Eye Locations Recommended Practice
SAE J964	Recommended Practice for Measuring Haze and Reflectance of Mirrors
SAE J986	Sound Level for Passenger Cars and Light Trucks, Standard
SAE J1050	Describing and Measuring the Driver's Field of View, Recommended Practice
SAE J1100	Motor Vehicle Dimensions, Recommended Practice
SAE J1113	Electromagnetic Susceptibility Measurement Procedures for Vehicle Components (Except Aircraft), Recommended Practice
SAE J1127	Low Voltage Battery Cables, Standard
SAE J1128	Low Voltage Primary Cable, Standard
SAE J1142	Towability Design Criteria and Equipment Use - Passenger Cars, Vans, and Light Duty Trucks, Recommended Practice
SAE J1143	Towed Vehicle/Tow Equipment Attachment Test Procedure - Passenger Cars, Vans, and Light Duty Trucks, Recommended Practice
SAE J1211	Recommended Environmental Practices for Electronic Equipment Design
SAE J1246	Measuring the Radius of Curvature of Convex Mirrors, Recommended Practice
SAE J2202	Heavy Duty Wiring Systems for On-

	Highway Trucks, Recommended Practice
SAE J1516	Accommodation Tool Reference Point for Class B Vehicles, Recommended Practice.
SAE J1690	Flashers, Recommended Practice
SAE J1889	LED Signal and Marking Lighting Devices, Recommended Practice
SAE J2087	Daytime Running Light, Standard

*Note: Copies of SAE documents may be obtained from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.

Tire and Rim Association, Inc. (T&RA)*

Yearbook

*Note: Copies of T&RA documents may be obtained from Tire and Rim Association, Inc., Command Building, 34 North Hawkins Avenue, Akron, Ohio 44313.

3 REQUIREMENTS

3.1 Description

The vehicle shall be two-wheel drive (2WD). The supplier will be requested to supply a percentage of four-wheel drive (4WD) or All-wheel drive (AWD) vehicles. The vehicle shall be provided with an automatic transmission and a fully enclosed weather-tight van style body. The cargo body shall be of a design with integral cargo and cab compartment. The vehicle shall be complete with all operating accessories customarily furnished and installed on a vehicle of this type, whether stipulated herein or not, to enable the vehicle to function reliably and efficiently under all conditions of service.

3.2 Prototype

The contractor shall furnish two or more prototype vehicles for examination and testing within the time frame specified by the Contracting Officer (CO), to prove that the production methods will produce vehicles that meet the requirements specified herein.

3.3 Materials

Materials shall be as specified herein. When materials are not specified, the vehicle and all parts thereof shall be made of materials that are standard to the automotive industry. All materials shall be new, suitable for the intended purpose, and shall be free of any characteristics or defects that detract from the appearance or which may affect the functions of the finished products.

3.3.1 Vehicle Equipment and Accessories

Except as otherwise specified herein, the vehicle and vehicle components, assemblies, devices, equipment, and accessories shall be automotive products that meet or exceed the requirements of this specification. The vehicle shall comply with all Federal Motor Vehicle Safety Standards and Regulations, Environmental Protection Agency Regulations, Federal Motor Carrier or any other Federal and 50 state compliance regulations applicable to the specified vehicle on the date of manufacture as relates to Postal vehicles.

3.4 Performance

Unless otherwise specified herein, the vehicle, when fully loaded, shall satisfy the following

performance requirements.

3.4.1 Fuel Economy Rating

The Prototype vehicles (see 3.2) shall be submitted to FTP-75, HFET and USPS Goodyear drive cycle evaluations performed by a qualified laboratory to verify fuel economy and emissions characteristics.

3.4.2 Road Speed

The vehicle shall have a road speed of not less than 104.6 kilometers per hour (km/h), 65 miles per hour (mph), in high gear (the minimum gear ratio), and be capable of maintaining a minimum sustained road speed of not less than 104.6 km/h (65 mph) when operated on smooth, hard-surfaced roads, on grades from 0 to 1%, and at altitudes of up to 914.4 meters (3,000 feet) when loaded to GVWR. The vehicle, when operated under these conditions, shall be capable of accelerating from 0 to a speed of 24 km/h (15 mph) within 5 seconds, from 0 to a speed of 80.5 km/h (50 mph) within 22 seconds, and from 0 to a speed of 104.6 km/h (65 mph) within 35 seconds.

3.4.3 High Speed Gradeability

The vehicle shall be capable of maintaining a sustained road speed of not less than 72.5 km/h (45 mph) while ascending a minimum 2.5% grade on smooth, hard-surfaced roads when loaded to Gross Vehicle Weight Rating (GVWR).

3.4.4 Low Gear Gradeability

The vehicle shall be capable of stopping on and then ascending in both forward and reverse drives, with a grade of not less than 20% when loaded to GVWR.

3.4.5 Parking Brake Performance

The minimum acceptable performance of the parking brake is the ability to adequately control and hold the vehicle in either direction (forward or reverse) on a 20% grade when loaded to GVWR.

3.4.5.1 Service Brake Performance* – In addition to the Federal Motor Vehicle Safety (FMVSS) requirements, the service brake shall be capable of developing, within the service brake system, a braking force of not less than 52.8% of the GVWR of the vehicle, and stopping the vehicle from a speed of 32.2 km/h (20 mph) with a distance of 7.6 meters (25 feet).

*Note: Unless otherwise specified, service brake performance requirements presume operation on dry, smooth, hard-surfaced roads free from loose or slippery material, and where grades do not exceed plus (+) or minus (-) 0.5%. Priorities of service brake performance and durability are (in order): wear, effectiveness, comfort (noise), and structural integrity.

3.4.6 Turning Ability

The vehicle's clearance circle diameter shall not exceed 12.3 meters (44 feet) curb to curb.

3.4.7 Physical Attributes

The vehicle shall meet the following attributes as defined.

3.4.7.1 Curb Weight – The curb weight shall include the weight of the chassis and body with all installed attachments, accessories, and equipment, and a full complement of fuel, lubricants, and coolant.

3.4.7.2 Gross Vehicle Weight Rating (GVWR) – The gross vehicle weight rating established for the vehicle shall be equal to or exceed the curb weight, plus the minimum payload of 680 kg (1,500 lbs.)

3.4.7.3 Payload Capacity Minimum – The minimum payload capacity is defined as the cargo-carrying capacity of the vehicle in kilograms (pounds) evenly distributed over the cargo compartment floor area.

3.4.7.4 Dimensions – The cargo area shall provide standing headroom and be capable of holding 155 ft^3 of mail and packages while allowing free floor space sufficient to access the stowed mail and packages. The cargo floor area shall also provide a minimum clear flat area of 108" x 72" while maintaining clear access to the rear curbside door for entry and exit. The vehicle covered by this specification shall be limited to the dimensions and capacities set forth in Table 3-1. Overall length, width, (excluding mirrors), and height dimensions shall be measured between the outmost extremities.

Wheel Tracks – Front and rear wheel tracks shall be approximately the same width

Wheelhouse volume shall not be included in the cargo volume calculations. All applicable dimensions shall be determined on the basis of the vehicle being loaded to its curb weight, parked on a level-ground surface, with the tires inflated to the proper inflation pressure as recommended by the vehicle and tire manufacturer and as specified herein.

Table 3-1. Physical Dimensions

CHARACTERISTIC	REQUIREMENT			
	Minimum		Maximum	
	SI	(US)	SI	(US)
Ground clearance at GVW*	18.5 cm	7.3"		
Mail cargo stowage capacity	4.38 m^3	155 $ft.^3$		
Rear door opening (clearance dimensions)	123.2 cm W 182.9 cm H	48.5" 72"		
Side door window sill height (above ground)			111.8 cm	44"
Width between wheel houses	121.9 cm	48"		
Maximum overall length			584.2 cm	230"
Maximum overall height			215.9 cm	106"
Vehicle width maximum (excluding mirrors)			203.2 cm	85"
Distance from truck floor to the ground	66.0 cm	26"	71.1 cm	28"
Interior ceiling to floor height w/door open	193.0 cm	76"		
Minimum clear flat cargo floor length	274.3 cm	108"		
Minimum clear flat cargo floor width	182.9 cm	72"		

*Note: SAE J1100, Ground Clearance Dimensions H148 and H153. Measurement excludes differential if applicable.

3.4.8 Maintainability

The 24,000-mile operational/durability test shall be completed without malfunction of a major component. A major component is defined as the engine, transmission, differential (or transaxle if so equipped), chassis, front suspension assembly, rear suspension assembly, body assembly, steering assembly, front axle assembly (if so equipped), brake system, exhaust system, and electrical system.

3.4.9 Environmental Protection

3.4.9.1 Emission Control Equipment – The vehicle shall be equipped with standard emission control equipment that is capable of complying with all applicable state and federal laws and regulations, governing control of air pollution from new motor vehicles and new motor vehicle engines that are in effect on the date of manufacture.

The vehicle shall be an alternative fuel vehicle (AFV) (either a dedicated or dual fueled vehicle), as defined in 42 U.S.C. §§ 13211.

Any alternative fuel offered must take into account the availability of an established fueling / charging infrastructure. To the extent an infrastructure must be constructed to support the new vehicle, the cost of this construction will be part of the supplier financial analysis. Alternative fuels will also need to take into consideration any unique costs associated with that type of engine as part of the financial analysis. The supplier financial analysis must take into consideration the total cost of ownership (purchase price, ongoing operating cost and disposal cost).

3.4.9.2 Exterior Sound Level – The exterior sound level of the vehicle shall not exceed 80 dB (decibel, scale A) when measured in accordance with SAE J986.

3.4.9.3 Interior Sound Level – The interior sound level, when measured in accordance with the test procedures set forth in DOT (49 CFR, Part 393 paragraph 393.94), shall not exceed the noise limits as specified therein.

3.4.10 Safety

Safety characteristics of the vehicle shall obviate hazards to personnel and property. Systems and components that are inherently hazardous shall be enclosed, guarded, or insulated as required.

3.4.10.1 Certification and Testing Results– Ten calendar days prior to the time of the scheduled Prototype inspection, the Supplier shall furnish six copies, in loose leaf or bound form, all requisite certifications and testing results. These documents shall be countersigned by a responsible company official, certifying all tests and certifications required by this specification, including those related to the EPA and the FMVSS, as applicable for the manufactured end product, have been performed. Certification documentation shall include descriptive paragraphs detailing test locations, grades, distances, and any required waivers for operation on public highways.

3.5 Design and Construction

Vehicles furnished under this shall be ruggedly constructed and highly maneuverable, offering the least possible demand on parking and platform space during loading and unloading operations. Total design shall incorporate the best principles of ruggedness, safety of operation, ease of handling, and human factors, with a minimum required scheduled preventative maintenance servicing.

3.5.1 Human Factors

The vehicle design shall offer the maximum of peripheral visibility, control, and reach, and accessibility to 95% of the operator population; i.e., having physical dimensions corresponding from the 5th percentile adult female (150.4cm (59.2 in.) in height) through the 95th percentile adult male (188.0cm (74.0 in.) in height) of the general U.S. population. Additionally, all operational features of the cabin must provide for an unobstructed entry and exit of the operator from a seated position.

3.5.2 Common Parts

Maximum practicable use shall be made of interchangeable hardware and fastening devices, and of a minimum number of types and sizes of bolts, screws, nuts, rivets, washers, and similar common (standard) parts.

3.5.3 Corrosion

When dissimilar metals are joined, special care shall be taken to ensure electrical

neutralization of the interface between dissimilar metals to prevent electrolytic corrosion. Where similar metals are joined, an industry recognized practice of corrosion proofing shall be utilized. Frame corrosion protection should be consistent with the life of the vehicle.

3.5.4 Ease of Maintenance

The vehicle configuration shall provide ease of accessibility for maintenance, servicing and/or removal of engine, transmission, drive train components, and installed accessory equipment. The replacement and adjustment of components shall be accomplished with minimum disturbance to adjacent components. Where incorrect installation of an item could cause malfunctioning of that item or of the system in which it is installed, unsymmetrical mounting, dowels, or match marks shall be provided to facilitate correct installation. Ease of maintenance provisions shall incorporate features ensuring operating and tool clearances, and shall simplify applicable maintenance and servicing operations. All fluid reservoirs, except battery and differential, shall be provided with a dipstick or sight glass to determine fluid levels.

Accessibility to dipsticks and filling provisions, (i.e. crankcase, battery, radiator, etc.,) shall be provided without removal or adjustment of accessories and parts, except for removal of access covers. The vehicle shall be designed for towing from either front or rear. Towing instructions applicable to the specific vehicle shall be provided in both the Operator Instructions Manual and Service Manual.

3.6 Chassis and Engine Components

3.6.1 Frame

The chassis frame or the equivalent load-carrying members shall be provided with adequate cross members, exclusive of engine supports; so designed and constructed as to support adequately the gross weight of the vehicle under all operating conditions specified herein. Cross members location shall not interfere with or shall be removable to allow for servicing, maintenance, and/or removal of the engine, and/or transmission assemblies.

3.6.2 Power Unit

3.6.2.1 Powertrain – The powertrain shall develop sufficient horsepower and torque to satisfy the vehicle performance requirements specified herein, within the manufacturer's recommended operating limitations. Unless otherwise specified herein, and the powertrain shall be equipped with the manufacturer's standard power unit components and accessories.

3.6.2.2 Fuel System – If the vehicle is powered by a liquid fuel, the vehicle shall include a built-in anti-siphon device and fuel filter. The fuel tank shall be fabricated of non- metallic material or stainless steel, and located between the frame rails. Minimum tank capacity shall be 75.7 liters (20 gallons). The fuel tank cap shall be secured to the tank filler neck or vehicle body by means of an external chain and/or cable. It is preferred that the tank filler neck is located on the right hand side of the vehicle. The fuel tank sending unit and in tank fuel pump, if applicable, shall be completely serviceable and/or removable without the necessity for dropping or removing the fuel tank assembly. All metal fuel lines shall be fabricated of stainless steel and all fittings shall be threaded (no quick-disconnect fittings).

3.6.2.3 Filters – The engine (and/or motor) shall be equipped with the manufacturer's standard oil filter. The engine shall be equipped with the manufacturer's standard dry-type air filter with an air filter restriction indicator. The air filter restriction indicator shall be located within the engine compartment, and clearly visible without removal of any engine bay components.

3.6.2.4 Cooling System – A combination closed-type cooling system shall be provided.

The cooling system shall be the heaviest-duty, highest capacity available for the vehicle design. System design shall provide for maintaining the engine transmission, or other systems to be cooled at a safe temperature under all vehicle operating conditions in ambient temperatures ranging from -34.4° C (-30° F) to 51.7º C (125º F), without the loss of coolant or overheating the engine or its components.

The coolant medium shall be thermostatically controlled for optimum engine, transmission, and component temperatures as recommended by the manufacturer for operation with extended life (ethylene glycol) antifreeze solutions. The system shall incorporate a compensating coolant-recovery reservoir with a minimum capacity of .95 liters (1 quart).

The reservoir shall be constructed of a translucent material. The radiator may be equipped with an optional sight glass located and installed so as to be readily accessible for inspection and servicing. The hose between the reservoir and the radiator, and the pickup tube in the reservoir, if applicable, shall be a rubber material having the same heat resistance as the heater hose. To permit complete drainage of the cooling system, sufficient clearance shall be provided to accommodate a 95th percentile male hand holding any required tools. If applicable, the turning radius of the tool must also be accommodated. The cooling system shall be equipped with the manufacturer's recommended thermatic or thermostatically controlled electric fan capable of maintaining coolant at the manufacturer's recommended operating temperature under the ambient temperatures specified herein.

3.6.2.5 Exhaust System – The vehicle shall be equipped with a heavy-duty stainless steel exhaust system designed and engineered for application with the specific engine furnished. Location and routing of components, thereof, shall be such that the heat transfer from such components shall not cause damage or be hazardous to adjacent fuel systems, components, brake lines, electrical cables, battery, tires, etc., or result in noticeable "hot-spots" in the cab or cargo body floor paneling. When insulation is used to isolate or minimize transfer of heat from the exhaust system, such insulation shall not be installed so as to be in direct contact with any components of the exhaust system. Catalytic converters shall have a protective heat shield. The exhaust shall discharge into the slip-stream to the street-side at rear of the vehicle. The tail pipe shall not extend beyond the outer-edge of the rear bumper or cargo area side panels. The direction of the exhaust discharge end of the tail pipe shall not result in undue disturbance of road dust. No component of the exhaust system shall be lower to the ground than the lowest point of other vehicle body or suspension components.

3.6.3 Drive Train

The drive train shall be a 2WD configuration. The design shall also package-protect for a 4WDdrive or AWD configuration. Design differences between 2WD and 4WD or AWD configurations should be minimal and be concentrated in the drive train and corner assemblies. A common frame and suspension should be used for both 2WD and 4WDversions. The powertrain, engine/transmission and/or the engine/transaxle assemblies shall be designed to be easily removed.

3.6.3.1 Transmission – The vehicle shall be equipped with an automatic type transmission having a parking pawl or other positive locking feature to prevent a vehicle roll away. The transmission shall be of the heaviest duty available with a full-flow external oil cooling system designed and engineered for severe service application (see 1.1). The transmission shall incorporate either a throttle-actuated or automatic-modulated control feature to force downshifting into lower gear ratios consistent with designed engine, motor, or transmission speed and torque capacities. The input torque capacity of the transmission shall not be less than the maximum torque developed by the engine and/or traction motor. The system shall include either a dash mounted shift lever or pushbutton shift selector.

The pushbutton shift selector design shall include buttons permanently marked “P”, “R”, “N”, “D”, “1” and “2” or similar as applicable) with backlighting, and a two-digit gear display and service indicator. The pushbutton shift selector buttons shall be designed and spaced such they are sufficiently operable by a 95th percentile male wearing gloves. Transmission mounted actuators shall include redundant position to prevent single point failures of the assembly. The actuator shall be able to withstand full load park pull-outs without damage. The system shall be capable of integrating with other vehicle systems to allow for future enhancements. If a shift by wire controller and actuator is used it shall meet the SAE J1113 series of EMC component level validation testing standards and comply with SAE J1211 automotive electronic reliability standards. Transmission cooling lines shall be fabricated of stainless steel. A means shall be provided to allow starter operation only when the transmission is in the neutral or park position unless the vehicle is equipped with an engine stop start type of option, in which case a suitable locking system will prevent the vehicle from being started in a condition other than neutral or park. The neutral start switch, when located at the transmission, shall incorporate weather-proof connections.

3.6.3.2 Axles – The front and rear axle shall be rated to satisfactorily sustain the specified GVWR. The drive axle(s) shall incorporate a heavy duty traction control function and stability control method. If a differential is used it shall be provided with magnetic type fill and/or a drain plug/chip collector, as applicable.

3.6.4 Suspension

The vehicle shall be equipped with a heavy duty suspension system having a rated capacity of not less than 100% of the maximum load imposed on each member measured at the ground when the vehicle is loaded to its GVWR. System design shall be such that the vehicle shall maintain an approximate level position in both transverse and longitudinal planes. Maximum deflection shall be no more than 2.5 inches from the unloaded to loaded condition as measured by the distance between the ground and the cargo floor at the latching point of the rear door when either empty or fully loaded (load evenly distributed throughout cargo area), and when the driver is either properly seated in or has dismounted from the vehicle. The vehicle's front and rear tracks shall be similar.

3.6.4.1 Spring Stops – Spring or axle stops shall be installed on the front (when appropriate) and rear of the vehicle.

3.6.4.2 Shock Absorbers – Both front and rear axles shall be equipped with heavy duty double acting gas filled shock absorbers.

3.6.5 Brake System

3.6.5.1 Service Brake – A four wheel anti-lock, power-assisted, hydraulic brake system equipped with traction control shall be provided that is the heaviest duty available for the vehicle offered. Front brakes must be disc type design. Rear brakes may be disc or drum type. Brake shoes or pads shall be a non-asbestos type, but may include some metallic residue to affect proper performance. The brake system shall use and be filled with "DOT-3" brake fluid and shall be provided with a visual means to indicate the service brake fluid level without removal of components. To the maximum extent possible, all brake lines shall be fabricated of stainless steel.

3.6.5.2 Parking Brake – In order to prevent roll away incidents, the vehicle shall be equipped with a “smart” electronic parking brake (EPB). The EPB shall apply automatically when the vehicle is parked, i.e., the vehicle is placed in “Park”, switched off, or otherwise determined to be left unattended (i.e. a seat switch) by the driver. The EPB shall disengage automatically when the vehicle is driven off without additional input from the driver. A switch shall also be located on the dashboard for manual control of the EPB. The brake actuating cables, if encased in a conduit, shall be of the permanent lubricating type.

A Parking Brake indicator light shall be located on the instrument panel.

3.6.6 Wheels and Tires

3.6.6.1 Wheels – Heavy-duty wheels shall be provided and shall conform to the recommendations of the Tire and Rim Association, Inc. for all-season, radial tubeless tires. The wheels shall be of identical size and construction. Wheel ratings must not be less than 100% of the load imposed on the wheel with the vehicle evenly loaded to its GVWR. The rims supplied shall be available within the aftermarket source of supply from not less than two independent sources.

3.6.6.2 Tires – All-season, steel belted radial tubeless tires having the same load rating shall be provided on all wheels. With the vehicle loaded to its GVWR, the maximum load imposed on each tire shall not exceed 100% of the Tire and Rim Association's recommended rated load at the tire manufacturer's designated inflation pressure for 96.6 km/h (60 mph) highway operation. The tires supplied shall be available within the aftermarket source of supply from not less than two independent sources.

3.6.6.3 Tire and Chain Clearance – Tire chain clearance shall be provided in accordance with SAE J683. There shall be no interference that shall prevent the use of tire chains under all conditions of load. Clearance shall be as determined herein (see 4.7.9) with both side doors closed.

3.6.6.4 Spare Wheel – A full-size spare wheel and tire identical to the vehicle's tire shall be provided for every ten (10) vehicles ordered. A spare wheel carrier is not required. The spare tire supplied shall be available within the aftermarket source of supply from not less than two independent sources.

3.6.7 Electrical Systems and Equipment

Unless otherwise specified herein, the vehicle shall be equipped with a heavy duty, 12-volt, electrical generating, starting, ignition, and lighting systems with appropriate switches, relays, and protective devices in accordance with DOT Federal Motor Vehicle Safety Standards and Parts and Accessories Necessary for Safe Operations, applied to the vehicle type offered. Two separate and dedicated power wiring leads shall be furnished with sufficient connectivity to their respective devices. The leads shall be rated for a 20 amp circuit and protected by a circuit breaker or fuse and have positive and negative polarity clearly marked. Clean computer power shall have little or no noise and shall have no transient voltage spikes that are harmful to sensitive electrical components. A dedicated ground shall run from the negative terminal on the battery to the location of this potential unit. The fuse panel shall be encased in a weatherproof enclosure, accessible from beneath the hood or from inside the cabin interior. All underhood and chassis connectors shall be weatherproof. All interior connectors and modules shall be located and shielded to protect from water intrusion that may result from high pressure washing. All wiring shall conform to the requirements of SAE J1292.

3.6.7.1 Ignition System – An ignition switch with replaceable cylinder lock (or equivalent) shall be provided. The ignition switch shall incorporate a current limiting device to minimize the amount of amperes passing through the switch. The switch shall be a cylinder type (or equivalent), keyed, and actuated by a removable key. The switch is to be in a remote location under the vehicle dash. In addition to the keyed ignition switch, an electronically controlled keyless ignition system, controlled by a hand held device, shall be provided to activate the "ignition on" function of the ignition system. Manual switches shall be provided to control the "engine start" and "engine off" functions of the ignition system. The system shall be capable of coding vehicles individually as well as providing a master code that would allow specific vehicles to be coded alike. The keyless ignition system shall be independent from the conventional keyed ignition switch provided. An audible alarm shall

sound if the mechanical key is left in the ignition. All wiring is to be routed in a secure manner and readily accessible. Ignition and all door locks shall be keyed alike. All locks and keys are to meet or exceed USPS-V-1267. There shall be no less than 300 different ignition switch combinations.

3.6.7.2 Starter System – If an internal combustion engine is proposed The vehicle engine shall be equipped with a high torque, minimum current draw starting motor capable of being controlled through ; an ignition system keyed switch, automatic stop/start system (if applicable) or an electronically controlled keyless ignition system. All system components, i.e., starting motor, switch, solenoid, wiring, cables, etc., shall be the heaviest duty available for the vehicle and engine combination offered, with a minimum expected life of 50,000 cycles. Hybrid systems shall include a 12-volt starter system to provide emergency jump start capability in the event that traction motor and traction battery power are normally used to start the engine. The powertrain shall be inoperative when the manual stop switch has been activated and the starter switch key is in the "off" position. The key shall be removable only when the switch is in the off and/or "locked" position. Starter and ground cables shall conform to SAE J1127 for type SGX cables.

3.6.7.3 Battery – Non-hybrid vehicles shall be provided with a 12-volt battery system, rated at a minimum of 100 amp-hr, having a cold cranking ampere (CCA) rate potential of not less than 650 amperes at -18° C (0° F) for thirty seconds. Dimensions and location of nearby components shall not interfere with the accommodations or servicing of the battery furnished by the original equipment manufacturer (OEM), or an SAE 30H580 replacement battery in accordance with SAE J537. Hybrid vehicles shall be equipped with a 12-volt battery system of sufficient capacity to power the vehicle in the event of a loss of traction battery power to allow the vehicle to be moved independently of the hybrid power system. The battery carrier and hold-down clamps shall be manufactured of an acid resistant, non-corrosive material, e.g., ABS, injected molded compound with 30 percent fiberglass reinforcement, and shall be of adequate dimensions to accommodate a replacement battery as well as the battery furnished as original equipment. High voltage systems shall comply with all existing Federal safety standards (i.e. FMVSS 305) as applicable.

3.6.7.4 Alternator – The vehicle shall be equipped with a 12-volt DC system with a minimum 125 amperes output alternator or power conversion device developing not less than 50 amperes output at engine idle speed. The electrical system shall be of the negative ground type.

3.6.7.5 Wiring – All electrical wiring shall conform to SAE J1128. Wiring shall be tailored to proper lengths. Grommets shall be used to prevent chafing where wire or harnesses pass through frame members. Depending upon the circuit routing used, any two or more wires running together shall be encased in protective tubing. Cable splices shall be of machine type only and unsupported lengths of wire shall not exceed 45.7 cm (18 inches). Wiring methods shall conform to the requirements of SAE J1292.

3.6.8 Lighting Equipment

The vehicle shall be equipped with lights conforming to the requirements of FMVSS No. 108 and SAE J1889. All lamp assemblies i.e., stop/tail, turn signal, and hazard backup (including the cargo liner behind the light assemblies) shall be installed utilizing security designed hardware to prevent removal, thereby prohibiting hand entry into the cargo compartment. All lighting assemblies shall incorporate pigtails that are hardwired into lighting assemblies. Pigtails shall incorporate waterproof connectors and dielectric grease shall be applied where they connect to the vehicle harnesses. No license plate bracket or lamp assembly is required. All lamp assembly connectors and wiring shall be designed specifically for use with the furnished lighting equipment, and be approved by the lighting

equipment source of supply.

3.6.8.1 Headlights – Headlights shall be automatic and include a sensor to convert from daytime running lights to normal operations when it is dark out. A separate headlamp switch shall be provided to control headlights under any lighting conditions. The headlight circuit shall incorporate a current limiting device to minimize the amperage passing through the headlight switch. Headlights shall meet the requirements of FMVSS No. 108.

3.6.8.2 Stop/Tail Lamps – Stop and tail lamps shall be combined in a single sealed LED unit aligned in the rear body paneling on either side of the rear door opening, immediately above or below the belt line, and in vertical alignment with the turn signal lamps. Also, a sealed LED stop lamp unit shall meet the requirements of FMVSS No. 108 and SAE J1889, to be installed in the rear body paneling immediately below the roof line and centered over the rear door opening.

3.6.8.3 Turn Signal System – The vehicle shall be equipped with an electronic, solid-state turn signal system conforming to the requirements of SAE J1690, designed as an integral part of the steering column that incorporates a heavy-duty turn signal operating unit (switch). All turn signal lamps shall be sealed LED units designed and engineered for severe service application and conform to SAE J1889. The turn signal operating unit shall be self-canceling and shall be of a Class A type conforming to SAE J589. The turn signals furnished on the rear of the vehicles shall be separate lamp assemblies from the stop/tail lamps and strobe lamps. The rear turn signal lamps shall be flush-mounted and installed in the rear body paneling on either side of the rear door opening. These lamps shall be located in horizontal alignment with each other above, and in vertical alignment with the stop/tail lamps. In addition, an auxiliary side turn signal lamp shall be provided on each side of the vehicle. These side turn signal lamps shall be located on the body paneling as far forward of the cab door as practicable, shall not protrude more than 3.8 cm (1.5 inches) from the body, and shall be installed to be on the same level at a height above the ground of not less than 71.1 cm (28 inches) or more than 152.4 cm (60 inches). Side turn signal lamps shall conform to SAE J914. All turn signal lamps, i.e., front, side, and rear, shall be equipped with amber-colored lenses. The system shall incorporate audible and visual signaling devices to alert the driver when the system is activated. Combined side marker and side mounted turn signals are acceptable. In an event when the strobe warning system is activated, use of turn signals shall override the strobe flashers in the back and front of the vehicle until the turn signal is turned off/deactivated.

3.6.8.4 Strobe Warning System – An electronic, solid state heavy duty, type vehicular strobe warning signal operating unit conforming to the requirements of SAE J1690 shall be separate from the turn signal system and shall be actuated by a heavy duty, service type toggle, rotary, push-on/push-off or push-pull switch mounted on the instrument panel. The strobe warning switch shall be capable of withstanding continuous operation in the hazard mode. If not otherwise provided as a component of the turn signal or as an integral part of the switch, a lamp shall be provided on the instrument panel to indicate that the strobe warning lamps are operating. The strobe warning lamps on the rear shall continue to operate when the service brakes are applied. All strobe warning lamps shall be sealed units. The strobe warning lamps furnished on the rear of the vehicle shall be separate from the brake/tail and the turn signal lamps. These lamps shall be located to be horizontally aligned above and in vertical alignment with the turn signal lamps. The lowest edge of the lamp shall be a maximum of 15 inches below the roof drip rail. The strobe warning lamps furnished on the rear of the vehicle shall be equipped with amber-colored lenses.

3.6.8.5 Backup Lamps – The vehicle shall be equipped with a two LED sealed backup lighting system, conforming to SAE J593. Individual backup LEDs shall be flush or surface mounted and shall be installed on or in the rear body paneling, one on each side of the rear

door opening. Backup LED shall be installed as high as practical, consistent with minimum photometric and installation requirements of SAE J593.

3.6.8.6 Interior Lighting – Overhead LED dome lights shall be installed in the vehicle. The lights shall be of such intensity and so located that a minimum of 4-foot candles of light be available over the surface of the mail tray in all of its lowest-adjusted positions. The lights in the cargo compartment shall be of such intensity and so located as to provide a minimum of two foot candles of light at a height of 15.2 cm (6 inches) at any point above the cargo floor. Light intensity requirements shall be met regardless of exterior light conditions. Lights shall be positioned so as to minimize the possibility of injury to personnel and shall be equipped with polycarbonate resin plastic lenses. An overhead reading LED dome light in the driver's compartment shall be controlled by a dedicated switch or push button that is readily accessible to the driver from his restrained seated position and have one light pointed towards the mail tray and another pointed at the driver's seat. The lights in the cargo compartment shall be controlled by two switches, one installed on the instrument console and the other installed adjacent to and on the inside of the right rear door post, at a height of not more than 152 cm (60 inches) above the ground, or be motion activated on a timer. If controlled by a switch the lights in the cargo compartment shall be wired so that the lights turned on or off by one switch may be turned on and off by the other switch. When both cargo compartment doors are closed, the lights in the cargo compartment must shut off. The switch in the cargo compartment shall be either recessed or armor protected. The switches shall be easily removable for servicing, and shall be identified as to their functional use.

3.6.9 Radio Interference Suppression

Vehicles shall be radio interference suppressed in accordance with SAE J551.

3.7 Body and Chassis Protective Components

3.7.1 Cab and Body

The body shall be a conventionally designed van body with integral cab and cargo compartments. The body shall be fabricated of any combination of aluminum alloy, plastic, and/or composite materials having the necessary structural characteristics to provide the level of service and life expectancy detailed in this specification. The body shall be weather-tight.

3.7.2 Roof Assembly

The roof shall be fabricated from either a single sheet of aluminum alloy or of a single-piece, molded, composite/structural plastic-reinforced roof assembly. Over the cab area, the roof shall have sound deadening material provided to minimize noise from roof drumming and oil canning*. A drip molding (gutter) shall be provided along both sides and across the rear of the body to direct water run-off. Drain holes or openings in this drip molding shall not be located over the door openings. Alternative insulating factors will be considered.

*Note: Oil-canning can be defined as a sheet metal characteristic which allows undesirable deflection and generation of objectionable noises. The intent of the specification is to minimize these two effects.

3.7.3 Flooring

Aluminum flooring shall be used throughout the vehicle. The floor shall be flat, at a height between 66.0cm (26 in.) and 71.1cm (28 in.) above the ground plane, and capable of supporting unit loads imposed during the intended use (see 6.1) of this vehicle. The operator's compartment floor shall be covered with a heavy-duty, embossed diamond-pattern vinyl floor covering material to provide thermal and acoustic insulation. The floor

covering shall include a removable section below the accelerator pedal which can be replaced when worn and held in place through a mechanical means.

The floor must also withstand repeated passage of loaded mail tray containers weighing as much as 227 kg (500 lbs.) and equipped with hard-rubber caster wheels. Where necessary, longitudinal sills shall be added to achieve the strength necessary to preclude oil canning or permanent deformation under normal vehicle operations. The floor shall be rated to support a loading of least 500 psi on any horizontal flat surface.

Anti-skid flooring will be used for the cargo area floor to prevent slipping. Rear wheel housings shall be rectangular with a flat, smooth-top surface. The edges and corners of the rear wheel housings shall have an inside radius of curvature not to be less than two times the thickness of the material used. The distance between the rear wheel housings shall be a minimum of 122 cm (48 in.). Rear wheel housings shall require an inner liner sufficient to withstand impacts from loose snow chains. If the rear wheel liner can be damaged by loose snow chains, it shall be easily replaceable.

3.7.3.1 Side-Entry Steps – One step shall be provided at each side entry door.

Each side step shall have a footprint, 25.4cm (10 in.) wide by 85.1cm (33.5 in.) in length. The front-most horizontal surface of the step shall be even with the front of each side door opening. Both steps shall be at a height no more than 35.6cm (14 in.) below the flooring plane. Step surfaces shall be non-slip, easily cleaned, and shall allow for water, snow, and ice drainage.

3.7.4 Front-Hatch Cover

A hinged front-hatch cover (engine hood) and/or a tilting front-end assembly shall be provided forward of the windshield to afford ready access to the engine compartment. The front-hatch cover with front hinge needs to allow for the front-hatch to be easily removable with a quick disconnect system. The hatch cover and/or tilting front-end assembly may be fabricated of composite material, structural plastic, or aluminum finished with a gel coat surface of not less than 381 microns (0.015 inch) and conforming to the white color specified in 3.16.3. Chopped fiberglass and/or sheet molding compounds are acceptable. Either system provided shall be furnished with prop-type supports or latch devices to retain the hatch in the open position.

Tilting front-end assemblies shall be designed to tilt forward not less than 75º to enable walk-up servicing access.

3.7.5 Bumpers

The vehicle shall be equipped with a full-width, rounded-end, front bumper and full-width; rounded-end rear bumper designed to withstand an 8 km/h (5 mph) direct frontal and direct rearward impact and a 6.4 km/h (4 mph) oblique impact at 30º to the vehicle center line. Each bumper shall be constructed so as to extend beyond all other projections (excluding mirrors and side door handles) protruding from the sides and front or rear, as applicable, of the vehicle. The ends of the bumpers shall be designed so as to eliminate the danger of snagging adjacent personnel and/or objects. The rear bumper design shall accommodate a stainless steel or aluminum step having a textured skid-resistant surface. The step shall be at least as wide as the rear door opening and a minimum of 10.2cm (4 in.) deep, without protruding rearward of the rearmost vertical bumper surface. The uppermost surface of the step shall be no more than (14 in.) above the ground plane. The step shall be designed to accommodate a distributed static load of 500 lb.

The front and rear bumpers, including their support braces and attaching hardware, shall be designed and reinforced to withstand an accidental cornering impact of the bumper end with an immovable barrier without causing permanent deformation of the bumper to the

chassis, body frame members, or body paneling. For the purpose of this requirement, an accidental impact is defined as an impact of a fully loaded vehicle (i.e., vehicle loaded to its maximum allowable GVWR) striking an immovable barrier at a speed of 6.4 km/h (4 mph) at 30° to the vehicle center-line.

3.7.6 Interior Panels

The interior sides, including side doors and the roof over the operator's compartment, shall be lined and all openings between inner and outer body paneling shall be closed. Cargo compartment interior wall paneling must be of sufficient gauge thickness to withstand stress and shock associated with normal cargo handling operations and shall be reinforced to eliminate oil canning* and minimize rattle. The cargo inner liners shall be fabricated from any combination of materials including aluminum, plastic, or composite, with the structural strength necessary a static load equivalent to 171 kg/m2 (35 lbs/ft2) and to prevent rattle.

*Note: Oil-canning can be defined as a sheet metal characteristic which allows undesirable deflection and generation of objectionable noises. The intent of the specification is to minimize these two effects.

Interior panels shall be either screw-fastened or riveted in place, except that the access doors provided for maintenance servicing shall be fastened with appropriate screws and lock washers. In addition, the passenger compartment shall have thermal protection that is a nonabsorbent, fire-resistant, fungus-resistant, and sound-absorbent insulation to assure that maximum bare metal temperature not to exceed 52° C (125.6° F), and maximum covered surface temperature not to exceed 60° C (142° F) under maximum ambient temperature of 37.8° C (100° F) and heavy engine load. The roof paneling (headliner) shall be a smooth, washable, and scuff- resistant material. The roof paneling shall be securely fastened in place.

3.7.7 Protective Partition

A solid protective partition consisting of a stationary section shall be provided, installed aft of the driver's seat and a sliding single door section having a clear door opening of 71.1 – 76.2 cm (28 - 30 in) wide. The partition shall be fabricated from any combination of materials including aluminum, plastic, or composite, with the structural strength necessary to withstand a static load equivalent to 171 kg per square m (35 pounds per square foot) and to prevent rattle. The entire partition shall be securely fastened and installed at both floor and roof to eliminate loss of heat from the operator's compartment. The sliding door section shall be mounted in tracks installed behind the driver side stationary section and shall operate on sealed bearings. The partition door shall be equipped with an electronically controlled keyless latch that is activated by a hand held device. The latch shall automatically lock when the door is in the closed position. The latch shall provide for a removable cylinder-type tumbler lock (or equivalent) mechanism, keyed to the ignition switch key, in accordance with USPS-V-1267 to unlock the latch from the closed position. The hand-held device shall unlock all doors. The latch and all hardware shall be designed and manufactured to withstand the rigors of its intended use (see section 6.1). The handle in the cabin shall be centered vertically 72.1 cm (28.4 in.) above the flooring. The door opening and partition design shall allow for access between the driver seat and the forward portion of the rear cargo area of the vehicle. The partition shall be located far enough to the right so that the mail carrier may access the door by turning left from the driver seat and must be far enough back to allow for maximum flexibility of the mail tray and for loading DPS under the tray itself. The protective partition door shall extend from the floor of the cabin to the ceiling of the vehicle, allowing for driver access. The protective partition door shall be wide enough to account for winter clothing of mail carriers and also account for the heavy weight of mail trays and the elbows of the carriers.

3.7.8 Load Retainer

Load retainer rails, fabricated of aluminum or steel and having at least a 255 MPA (37,000 psi) yield strength, shall be furnished. Each side along with the partition wall shall have an integrated locking system that will accommodate future equipment. The locking tracks should consist of three horizontal tracks for multiple use (route cases, mobile MTE, etc. The retainer rails shall be located near the floor, center and ceiling and shall run the full length of each side of the cargo area and along the back of the partition wall.

3.8 Seats and Seat Restraints

3.8.1 Driver's Seat

A high-back driver's seat with an integrated, fixed head restraint shall be provided. The location of the H-point of the seat and the seat cushion angle shall be determined in accordance with SAE J826-1995. The seat shall be equipped with an adjustable lumbar support. The height of the driver's seat shall be 39.5" measured from the ground plane to the top of the seat cushion. All vehicle controls shall be accessible to drivers that range from a 5th percentile female to a 95th percentile male.

The seat cushion and back cushion shall be upholstered in a heavy-duty, nylon-woven fabric (Craftex Fabric or equivalent). Seat cushion seats shall be designed and/or located so as not to be subject to early wear failure as a result of repeated operator dismounts. Seat cushions and seat backs shall be easily replaceable as individual components. See table 3-2.

3.8.2 Companion Pedestal Seat

One companion pedestal seat utilizing similar materials to the driver's seat shall be provided for every 10 vehicles. Seat adjusters are not required. For installation and removal of the seat from its mounting location, sufficient clearance must be provided to accommodate a 95th percentile male hand holding any required tools.

3.8.3 Driver's Seat Restraint

A type 2A seat belt assembly shall be integrated into the design of the driver's seat. Service and/or replacement of the seat and seatbelt assemblies shall be independent of each other. The seat belt shall be orange in color, easily identified from a distance, and equipped with detachable shoulder harness with an adjustable anchor point. When not in use, belt buckles or boots shall be positioned in such a manner so as to not interfere with a seat occupant when entering or exiting the vehicle or cargo area. As the belt webbing passes around the outside of the seat, a line from the anchorage point to the occupant's H point (see 3.8.1) shall make an angle with the horizontal as near as practicable to 45°. The restraint system hardware, mounting, and performance shall conform to FMVSS 208 (see 3.10), 209, and 210, and shall accommodate the 5th percentile female through 95th percentile male. The vehicle shall be equipped with an audible lap belt reminder that shall be tamper-proof to the extent practicable.

Table 3-2. Driver's Seat Dimension Recommendations

PARAMETER	RECOMMENDATION			
	Minimum		Maximum	
	SI	(US)	SI	(US)
Cushion width				
- Actual width at H-point	50.0 cm	(19.7”)	–	–
- Clearance at H-point	52.5 cm	(20.7”)	–	–
- Width at front of cushion	52.5 cm	(20.7”)	–	–
Cushion length				
- Forward of H-point on thigh line	–	–	30.5 cm	(12.0”)
Backrest width				
- At waist (22.0 cm above H-point)	38.4 cm	(15.1”)	–	–
- At chest (318 cm above H-point)	47.1 cm	(18.5”)	–	–
- Height of side bolsters above H-point	–	–	28.8 cm	(11.3”)
Backrest height	41.0 cm	(16.1”)	–	–
Head restraint height (top of restraint above H-point along back line)	80.0 cm	(31.5”)	–	–
Seat position width (hip and shoulder clearance)	65.6 cm	(25.8”)	–	–

3.8.4 Companion Seat Restraint

A type 2, 3 point seat belt assembly, integral to the companion seat, shall be provided. The restraint system hardware mounting and performance shall conform to FMVSS 208, 209, and 210.

3.8.5 Cargo-Area Companion Seat Coupler

A seat coupler shall be located in the cargo area such that it will easily accept the companion seat in a forward-facing position and allow for sufficient clearance to the bulkhead for a 95th percentile male, just behind the opening of the bulkhead access door. The pedestal companion seat should be able to be placed into the floor of the vehicle without utilizing tools.

3.8.6 Cabin-Area Companion Seat Coupler

A seat coupler shall be located in the cabin area forward of the bulkhead access door opening. With the mail tray (see 3.15.6) removed, the coupler shall easily accept the companion seat in a forward-facing position and allow for sufficient clearance for a 95th percentile male. The pedestal companion seat should be able to be placed into the floor of the vehicle without utilizing tools.

3.9 Steering System

The vehicle shall be equipped with a right-hand drive power steering system conforming to the requirements of FMVSS 203 and 204. The steering wheel shall be located below the steering wheel center cover. The steering wheel shall have a 381±25 mm (15±1 in) diameter with soft-grip material. The steering column is to be equipped with tilting (10 degrees up and 10 degrees down from normal center) and features that shall allow the steering wheel to be positioned for adequate hand, arm, leg and foot clearances when equated to the 5th percentile female through the 95th percentile male driver. The steering

mechanism shall be of a type utilizing Ackerman steering geometry that is biased for low-speed maneuvers but does not significantly compromise performance in high-speed maneuvers. The intent of this steering geometry is to reduce tire wear when pulling into and away from curbside mail boxes. The steering mechanism shall be capable of controlling the direction of the fully loaded vehicle under all operating conditions.

3.9.1 Instrument Panel

All wiring to the instrument panel shall be routed so as to prevent wear during steering wheel adjustment, but also allow for easy access for servicing. The instrument panel shall include, at a minimum, the following gauges and indicators: speedometer, odometer, oil-pressure gauge, coolant temperature gauge, fuel gauge and voltage gauge. The panel shall also include a single indicator light for the following functions: oil pressure, low oil, low coolant, coolant temperature, and voltage; that will illuminate if/when any of these measured parameters are outside of the normal operating range (sensors, transducers, wiring, or gauges). Instruments, indicators, and panel controls shall be located, identified, and illuminated to conform to FMVSS 101 and to all of the SAE standards listed in 2.2. Instrument face design, where used, shall provide for a dial scale increase from low to high readings. The speedometer shall be marked in mph and km/h units with mph in the superior positions. All instruments shall be internally illuminated utilizing standard, heavy-duty automotive-type bulbs conforming to SAE J573 or LEDs. Instrument illumination shall be controlled by a device providing variable light intensity from OFF to full bright illumination, and shielded to prevent reflected glare in the windshield during both night and day operations. All electrical switches and control cables shall be a heavy-duty type designed for severe service application. Control cables shall be manufactured of corrosion-resistant components and shall be lubricated prior to assembly. All instruments, instrument and indicator lamps, circuit breakers, switches and electrical wiring, and all control cables shall be readily accessible for ease of maintenance and/or replacement. The layout and operation of operating controls, levers, and pedals (see 3.14.1), including accessory equipment shall be optimized, following human factors principles for the 5th percentile female through the 95th percentile male from the restrained seated position and shall allow for ample clearance for free uninterrupted leg, foot, arm, and hand movement incident to safe vehicle operation. Functional controls shall be positioned to maximize their ergonomic interface with the operator and their locations prioritized by the most critical vehicle operating functions. The back panel surface of the instrument console and top surface of the dash shall be coated or covered with a light-absorbent, non-reflective material to minimize the reflection of these surfaces in the windshield during both day and night operations.

Clearance dimensions shall be determined on the basis of the 95th percentile male driver dressed in heavy winter clothing.

3.10 Passive Restraint System

Passive restraint requirements shall conform to FMVSS 208 and specifically applies to vehicles being sold exclusively to the USPS (reference FMVSS 208, Section 4.2.6). At a minimum, a driver's airbag shall be installed in the steering wheel or in other location that provides an equivalent level of crash protection for the driver.

3.11 Heating/Ventilation/Air Conditioning

3.11.1 Heater and Defroster

The vehicle shall have the manufacturer's standard heavy duty integrated, heating and defrosting system. The heater unit shall generate sufficient heat so that the temperature measured at the driver's seat is at least 18.3 degrees Celsius (65 degrees Fahrenheit) when the outside ambient temperature is -34 degrees Celsius (-30 degrees Fahrenheit).

Discharge outlets shall be capable of directing heater air evenly over the cab floor area and or to the defroster outlets, allowing for heating and defrosting separately or simultaneously. Air flow, temperature, and defrost controls shall be variable from the closed/off to the fully open/on positions, and controllable by the operator. Vent selection controls shall be easily reached and operated by the driver from the restrained driver seated position. Defroster performance shall conform to the requirements of SAE J382 when tested in the manner prescribed by SAE J381.1. The blower fan shall have at minimum a three-speed motor operated by a single dash mounted switch wired to be inoperable when the ignition switch is in the "off" position. The operator/passenger area shall be insulated as necessary to maintain the required temperature as long as the heater is continuously operating.

3.11.2 Ventilation

All sources of cab ventilation air shall be ducted from outside air and shall not have air intakes opening into the engine compartment or exhaust slip stream. The air intake vents shall be equipped with a method to prevent entry of foreign matter and include baffles to prevent the entry of water entrained in the air from entering the cab interior. There shall be a minimum of two adjustable instrument panel mounted directional air discharge vents. A ventilation system for the vehicle to provide positive pressure in the cargo area is required.

3.11.3 Air Conditioning (Optional)

The benefits of air conditioning are under review by the USPS. Suppliers shall provide air conditioning designs as optional equipment. Because the cargo area is not climate-controlled and the window must frequently be opened on most delivery routes, air conditioning designs shall concentrate the conditioned air on the driver.

3.12 Visibility

All visibility requirements shall be met from two reference eye points representing typical eye locations of drivers who are 5th-percentile-female and 95th-percentile- male by stature. The 5th-percentile-female reference point shall be located on the driver centerline 693mm (27.28 in.) aft of the accelerator heel point and 923mm (36.34 in.) above the accelerator heel point. The 95th-percentile-male reference point shall be located on the driver centerline 822mm (32.36 in.) aft of the accelerator heel point and 1072mm (42.20 in.) above the accelerator heel point. All visibility requirements shall be met with the doors closed.

3.12.1 Forward Visibility

The forward vision targets shall be defined relative to four planes. The front plane shall be a vertical plane perpendicular to the longitudinal axis of the vehicle and tangent to the forward-most part of the vehicle, including the bumper, but excluding the mirrors and mirror attachment hardware. The right-side plane shall be a vertical plane parallel to the longitudinal axis, and tangent to the outermost point on the right side of the vehicle, including the bumper, but excluding the mirrors and mirror attachment hardware. The driver centerline plane shall be a vertical plane parallel to the vehicle longitudinal centerline that passes through the centerline of the steering wheel. The ground plane shall be a horizontal plane on which the vehicle rests with the loaded to curb weight.

The vehicle shall provide an unobstructed view from the 5th-percentile-female and 95th-percentile-male reference eye locations to a point 2.1m (83 in.) forward of the forward plane at the intersection of the ground and centerline planes.

The vehicle shall provide an unobstructed view from the 5th-percentile-female and 95th-percentile-male reference eye locations to a point 0.92m (36 in.) to the right of the right side plane on the intersection of the ground and front planes.

3.12.2 Lateral Visibility

The lateral visual angle measured along the horizontal plane of the specified eye locations for the 5th-percentile-female and the 95th-percentile-male, from the straight-ahead position to the trailing edge of the door glass on the driver's side of the vehicle, shall be not less than 125°. The lateral visual angle measured along the horizontal plane of the specified eye locations, from the straight-ahead position to the trailing edge of the door glass on the side opposite the driver, shall be a minimum of 100°.

Establish a vector in side view on the driver centerline starting at the 95th-percentile-male reference eye point and passing through the windshield at an angle of 10° above horizontal. Establish a horizontal reference plane 5.1cm (2 in.) above the intersection of this vector with the inside surface of the windshield. No portion of the top edge of any glass in the right and left side of the operator's compartment may lie below this plane. The bottom edge of all glass in the right and left sides of the operator's compartment shall be not more than 5.1 cm (2 inches) higher than the horizontal plane through the bottom edge of the front windshield.

In order to maximize visibility, a windshield/side door window design should be of a single A-pillar design without a "vent window" or "quarter pane" window and associated frame element aft of the A-pillar.

3.12.3 Visibility Obstructions

The vision obstruction caused by the A-pillar shall not exceed 5° left and 11.5° right at any vertical position between the horizontal reference plane established in section 3.12.2 and a horizontal plane 20.3cm (8 in.) below the 5thpercentile-female reference eye location. The vision obstruction shall be measured as follows:

a) Construct a plan view through the A-pillar with the door closed.

b) Construct vectors from the plan-view location of the 5th percentile reference eye location tangent to each side of the pillar section.

c) The vision obstruction shall be the angle between the two vectors.

There shall be no windshield center strip.

3.12.4 Glazing

Safety glass conforming to ANSI/SAE-Z26.1 shall be used throughout the vehicle. All windows shall be glazed with laminated safety glass that includes an infrared (IR) reflective film to reflect the sun's heat and maintain a cooler cabin temperature. The windshield shall be installed into place using urethane adhesive.

3.13 Doors

3.13.1 Side Doors

The vehicle shall be provided with sliding type doors on both the left and right side of the operator's compartment. All bearings shall be sealed to prevent the occurrence of rust. The driver-side sliding door shall allow for a minimum opening 75.8 cm (29.9 in) wide from the base of the door to a height of 105.4 cm (41.5 in.) above the ground plane. An additional, windowless, non-hinged door (i.e. sliding) with a minimum opening of 75.8 cm (29.9 in) that provides access to the cargo area, immediately behind the driver's seat bulkhead, on the curbside of the vehicle is required. Doors sliding on the outside of the vehicle are desirable but pocket doors may be considered.

Adequate clearance shall be provided between the door and the dashboard or instrument console to permit free access to the door handle and to minimize the possibilities of hand injuries. Door handle height shall be as high as practicable for right and left side doors

while accommodating left and right side window dimension requirements. A seal shall be placed between the windows and window apertures on the cabin-side of the doors to prevent mail from falling inside of the doors.

3.13.1.1 Side Door Windows – The driver and passenger doors shall be equipped with roll up windows featuring the heaviest duty window regulator assemblies available, with a minimum expected life of 250,000 cycles. The regulators shall hold the windows in any position against road shock and vibration and provide positive security in the closed position. Both window crank handles shall provide for smooth and effortless operation, with the driver-side crank handle positioned conveniently for smooth, effortless operation through its full rotation for the 5th percentile female and 95th percentile male while restrained in the seated position. To guard against water intrusion into the side doors and against mail falling inside of the side doors, a seal shall be provided on both sides of each side door window, affixed to the window apertures of the doors.

Window sill height from the ground plane should be no more than 94.0 cm (44 in.). The window apertures shall offer maximum visibility commensurate with door design and safety, but shall not be less than 72.4 cm (28.5 in.) high by 71.1 cm (28 in.) wide at sill height. The side door windows shall be positioned as far forward as practicable. A smaller portion of the window that rolls down with the ability to roll down the entire window will be considered in order to offer weather protection to the driver.

3.13.1.2 Side Door Latch – Side doors shall be equipped with latches to retain the doors in the open position that allow the doors to "slam" latch without locking in the open position. The side doors shall also be equipped with an electronically controlled keyless latch that is activated by the same hand-held device as the keyless ignition system (see Section 3.6.7.1). The latch shall automatically lock when the door is in the closed position after a programmed delay to be determined by the USPS after contract award. A programmable hand-held or wrist band device shall be used to unlock all doors. The curbside door latch design shall incorporate a method to gain access to the vehicle if the battery is dead or a replaceable, cylinder-type (or equivalent) lock mechanism that is independent from the handle and coded to the ignition switch key (see section 3.6.7.1). The system shall be capable of coding vehicles individually as well as providing a master code that would allow specific vehicles to be coded alike. A manual electronic switch shall be provided in the cab area to unlock the doors. The manual inside unlocking thumb latch lever, or its functional equivalent, shall be within reach and operable by a 5th percentile female while restrained in the seated position. The latches and all hardware shall be designed and manufactured to withstand the rigors of their intended use (see section 6.1). The latch striker plate on the front door post shall be designed to prevent the door, when locked, from being opened without the use of a key or the electronic control. Latch striker plates shall be provided with rubber bumpers to preclude damage to door lock latch mechanism.

3.13.2 Rear Door

A full opening aluminum (or approved alternative*) roll-up rear door or similar design shall be provided for entry into the cargo compartment. This door shall be a multiple section design providing a minimum radius of curvature at the roof line when it is lifted from the floor and rolled upward into a track in the roof. The door shall be weather tight and shall close approximately 6 mm (0.25 inch) below the floor level. The door, when installed, shall be counterbalanced to open and close with one hand and a maximum of 20 lbs of force.

*Note: Supported engineering data must be provided for determination of suitability of alternate materials.

3.13.2.1 Rear Door Accessories – A minimum 10 cm wide by 2.5 cm deep (4 in. by 1 in.), heavy-duty, closed-type recessed grab handle shall be mounted on the left side, outside bottom section. A 5.1 cm wide by 30.5 cm long (2 inch by 12 inch), pull down, nylon-loop

strap shall be installed approximately 5.1 cm (2 inches) above the bottom edge, and 25.4 cm (10 inches) from the right side of the outer surface of the door. A minimum 10 cm wide by 3 cm deep (4 inch by 1.125 inch) plastic-coated, horizontal lever type latch release grab handle shall be installed above the door lock on the bottom center of the inside of the door. Alternative rear or side door accessories shall be acceptable, subject to compliance with the intent and operational features presented in this specification.

3.13.2.2 Rear Door Latch – The rear door shall be equipped with a dual latch-single lock, slam-type, latch and/or lock attached to the center of the bottom section. The rear door shall also be equipped with an electronically controlled keyless latch that is activated by a hand held or wrist band device (See 3.13.1.2.) The lock mechanism in the rear door latch shall be keyed to the ignition switch key and shall permit the key to be removed from the outside in the lock position only. The lock shall incorporate a 2 cm (0.75 inch) grab handle. Provisions shall be made for releasing the latch and opening the door from the inside of the vehicle without a key. The door shall be easily opened from the inside of the vehicle by a 5th percentile female and a 95th percentile male. This location shall be appropriately marked. Alternate latch systems shall be acceptable, subject to compliance with the intent and operational features presented in this specification and providing the necessary security for the cargo area. The latch shall automatically lock when the door is in the closed position after a programmed delay to be determined by the USPS after contract award.

3.13.3 Door Hardware

All door hardware shall be the corrosion-resistant, heavy-duty type. Alternative rear or side door accessories shall be acceptable, subject to compliance with the intent and operational features presented in this specification.

3.14 Instruments and Controls

3.14.1 Service Brake and Accelerator Pedals

A fore-aft-adjustable service brake and accelerator pedal system shall be provided. Orientation of the accelerator pedal shall be such that the pedal reference point, as measured from the accelerator heel point, shall be at a distance of 20cm (7.9 in.) on a pedal plane angle of 50° in accordance with SAE J1516. Fore- aft adjustment of both pedals shall allow for 7.6cm (3 in.) of rearward travel and shall be controlled electronically by a control located on the instrument panel. There shall be no less than 5.1cm (2 in.) lateral separation between the right edge of the brake pedal pad and the left edge of the accelerator pedal pad. The brake and accelerator pedals shall be provided with nonslip, replaceable, rubber pedal pads secured by such means as required to prevent detachment under normal vehicle operating conditions. Brake pedal-pressure effort shall not exceed 445 newtons (100 lbs.) under maximum braking deceleration.

3.15 Vehicle Accessories

3.15.1 Heater and Defroster

A heavy-duty, fresh air-type hot water heater/defroster with three-speed electric blower shall be furnished. Heater performance shall conform to the requirements of J638, and defroster performance shall conform to the requirements of SAE J381, light-duty utility vehicles, tested in the manner prescribed by SAE J638 and J381. A certified copy of test data shall be furnished to the CO (see 6.3). Heater shall generate enough heat so that the air temperature at the operator accelerator is at least 18.3° C (65° F) when the outside ambient temperature is - 34.4° C (-30° F) with windows closed.

3.15.2 Windshield Wipers

The vehicle shall be equipped with the heaviest duty dual windshield wiper system

available. The windshield wipers shall be electrically operated, having a minimum of two-speeds, and an intermittent speed. The wiper system pivot shall be located below the windshield and be designed to provide a wiped area, offering the greatest practicable scope of vision through the windshield during inclement weather, when based on the relative eye range contour of a 95th percentile adult male driver in the normal seated operating position. Windshield wipers shall conform to FMVSS 104 and SAE J198. If the linkage is hidden under the dash it must be easily accessible to repair/replace all linkage and pivots.

3.15.3 Windshield Washer System

The vehicle shall be equipped with an electrically operated, dual windshield washer system with washer nozzles mounted on the body and have a reservoir capable of holding one gallon of washer fluid.

3.15.4 Sun Visors

The vehicle design shall be equipped with a dual sun visor system. Each sun visor shall be secured at the outer (windshield pillar) end by a double hinge that shall permit the visor to be rotated vertically, from an approximate horizontal position against the roof headliner to a full vertical position behind the windshield, and to be rotated laterally from a position parallel to the windshield to a position parallel with the side door window. The hinge mechanism shall be capable of holding the sun visor in any position of adjustment against road shock and vibration. The sun visors shall be at minimum 25.4 cm (10 in.) in length. Other alternative designs may be considered.

3.15.5 Inside Hood Latch

An inside spring-loaded hood release mechanism shall be installed within the cab compartment. The spring-loaded feature shall provide upward hood movement, from the primary latch position to the secondary latch position, when the hood release is activated. The secondary latch is not required if the hood is of forward tilt design. The hood release mechanism shall be designed and located to preclude accidental release during normal vehicle operation in both primary and secondary latch positions.

3.15.6 Mail Tray

A two tier mail tray, constructed of aluminum shall be provided immediately to the left of the driver. The mail tray capacity shall be a distributed load of 340 lbs. with 240 lbs. on the top tray and 100 lbs. on the bottom tray. Each mail tray shall be 66.0 cm (26 in.) wide by 99.1 cm (39 in.) in length from front to rear, and shall have a vertically flanged edge 5.1 cm (2.0 in.) high. The front of the bottom tray shall be able to adjust down 6 degrees. All controls shall be accessible and operable for the 5th percentile and 95th percentile male. Tray adjustment controls shall be intuitive, i.e. movement forward and rearward of an adjustment control and shall move each tray position forward and rearward independently from one another. Further, location and lateral adjustment of each mail tray shall provide for a range of lateral clearance of between 16.5 cm (6.5 in.) and 25.4 cm (10 in.) between the left edge of the driver's seat cushion and the right edge of the mail tray. The mail tray shall adjust to the left no closer than 2 inches from the left hand door or forward no closer than 2 inches to any permanent structure. Longitudinal positioning shall provide for forward adjustment of no less than 25.4 cm (10 in.) forward to accommodate the reach of a seated 5th percentile female. The entire mail tray needs to be easily removed and installed. The support structure shall be designed preferably with a quick release but if a tool is required there needs to be sufficient hand and tool clearance for a 95th percentile male hand. The tray must also provide for acceptable foot clearance for the 95th percentile male while wearing heavy boots (to permit the 95th percentile male to swivel his body toward the tray rather than be forced to twist his torso toward the tray). The mail tray must also be easily

repositioned to allow the driver unobstructed passage to the cargo area.

3.15.7 Forms Holder

The vehicle shall be equipped with a composite/plastic or aluminum forms holder having six compartments. Each compartment shall be designed to accommodate stacks of forms that are 14.0 cm (5.5 in.) by 8.9 cm (3.5 in.) or 17.7 cm (6.9 inches) by 13.7 cm (5.4 in.). Fabrication of this compartment shall include a pen/pencil and rubber band holder. All exposed edges shall be rolled or provided with a radius of curvature to prevent injury. Location of the forms holder shall not adversely affect access to the mail tray or other components. The forms holder shall be within reach of the 5th percentile female and the 95th percentile male in the normal seated position, and the most frequently used compartments shall be located closest to the 5th percentile female when in this position. All exposed edges shall be rolled or provided with a radius of curvature to prevent injury.

3.15.8 Supplies and Equipment Storage Compartment

The vehicle shall be equipped with a composite/plastic or aluminum storage compartment designed to contain items such as stamp books, a note pad, pencils, and rubber bands. This compartment shall be located overhead or an easily accessible area in the cab of the vehicle. All exposed edges shall be rolled or provided with a radius of curvature to prevent injury.

3.15.9 Cup Holder

The vehicle shall be equipped with a standard adjustable cup holder. The cup holder shall be within reach of the 5th percentile female and 95th percentile male in the normal seated operating position. All exposed edges shall be rolled or provided with a radius of curvature to prevent injury.

3.15.10 Coat Hooks

Two coat hooks shall be provided. The hooks shall be located on the protective partition in the cabin behind the driver's seat at least 46 inches above the cabin flooring.

3.15.11 Docking Station

A flat area shall be provided on or adjacent to the dash panel of at least 15.2 cm (6 inches) wide by 25.4 cm (10 inches) high for USPS electronic mail delivery operations equipment. The area shall be set back at an angle such that view is unobstructed for the 5th percentile female through the 95th percentile male. The location shall accommodate a rear- mounted scanner docking station with a screw-hole pattern to be determined. The scanner shall be approximately 1.5 lb. and approximately 20.3 cm (8 in.) tall by 5 cm (2 in.) deep by 8.9 cm (3.5 in.) wide. The mounting location shall be within reach of the seated 5th percentile female through the 95th percentile male. The area shall also include two 12 volt power ports with 20 amp circuits to power the equipment.

3.15.12 Grab-Handles

A stainless steel or brushed aluminum grab-handle shall be mounted on each of the vehicle's two A-pillars and each of the two rear corner posts. Positioning of the A-pillar-mounted grab handles shall be on the inside of the vehicle, and shall not block direct vision of the driver. All grab handles shall be located such that they are centered 160 cm (63 in.) above ground level to assist in egress and ingress into the vehicle. All grab handles shall be rated to withstand a force of 300 pounds applied in any direction normal to the handle without permanent visible deformation.

3.15.13 Camera and Monitor System

The camera and related hardware shall conform as a minimum to SAE standards as applicable.

3.15.13.1 **Rear Vision Camera** – A rear vision camera and monitor system shall be provided. The camera shall be sealed, weatherproofed, and protected from impact with foreign objects. The camera and related components shall be as inconspicuous as practicable. It shall provide audio and vision including the entire rear bumper to an area at least 2.74 meters (9 ft) behind the rear bumper. The system shall provide a manual on and off control for the camera and monitor. It shall also automatically turn on when the vehicle transmission is placed in reverse.

3.15.13.2 **Front Bumper Sensor –** A front bumper proximity sensor system shall be installed on the vehicle to warn of the presence of obstacles and to give an aural indication of approximate distance to the obstacle.

3.15.14 Mirrors

The vehicle design shall be equipped with a mirror system to provide forward and rear visibility to the driver from a seated position. The mirror assemblies shall conform to the requirements herein, and shall consist of convex and plane mirrors that are adjustable independently of each other. The mirror assemblies shall be complete with all attachments and necessary hardware to mount on the vehicle. The mirrors and hardware shall conform, as a minimum, to SAE recommended standards and to FMVSS No. 111 for trucks with GVWR of 10,000 pounds or less. All mirrors shall be adjustable for orientation around both horizontal and vertical axes. The angle adjustments on the plane mirrors, as specified in section 3.15.14.3, shall be motorized and controlled by a switch or switches located on the instrument panel and accessible to the 5^{th} percentile female and 95^{th} percentile male drivers while seated in their normal driving positions. Additionally, plane mirrors shall incorporate heaters that shall be manually controlled by an instrument panel-mounted switch and shall conform to the EMI limits set forth in SAE J1113. Mirror heaters shall switch off automatically after a time appropriate to defrost the mirrors.

3.15.14.1 **Field of View** – Mirror fields of view shall be assessed for all mirrors from the 5^{th} percentile female and 95^{th} percentile male reference eye location defined in paragraph 3.12. Lateral measurements must be made with the side door closed.

3.15.14.2 **Forward Visibility** – A convex mirror shall be located on the left fender to provide visibility in front of the vehicle. The mirror orientation shall be adjustable. Referring to the planes defined in section 3.12.1, the mirror shall provide, without concurrent adjustment, a view extending from the bumper forward along the intersection between the right side plane and the ground plane and the ground plane to a point 2.7m (9 ft.) forward of the front plane.

3.15.14.3 **Lateral Vision** – Lateral and rear vision must be provided by five exterior mirrors as described in this section. One convex mirror shall be mounted on the left fender as close as possible to the front of the vehicle. The requirements of this section may be met by the convex mirror required in section 3.15.14.2. or by a separate mirror mounted as close as practicable to the mirror required by 3.15.14.2. The left fender mirror shall be mounted such that the mirror field of view includes the side of the vehicle aft of the rear axle. When adjusted such that the inner-most edge of the mirror field of view shows the side of the vehicle aft of the rear axle, the lateral field of view measured in plan view shall be at least 90°.

One convex mirror shall be mounted on the right front fender. The entire mirror shall lie inboard of the plan-view perimeter of the vehicle including the bumpers. The right fender mirror shall provide a 90° lateral field of view that overlaps in plan view with the field of view provided by the right-side planar mirror when the planar mirror field of view includes the right side of the vehicle aft of the rear axle.

A planar mirror shall be located on the right side of the vehicle. The mirror shall be placed

as close to the driver as possible while meeting the other requirements. The mirror shall be located such that the entire reflective surface of the mirror is visible from both the 5th-percentile-female and 95th-percentile- male reference eye locations with sightlines passing forward of the A-pillar/door frame. The mirror shall be positioned such that the lower edge of the mirror housing is above the horizontal plane passing through the 95th-percentile male reference eye location. The mirror shall be positioned such that the right side of the vehicle, aft of the rear axle, is visible in the mirror. The mirror shall be mounted at a minimum of 55" above the ground plane at GVWR in order to clear the height of typical mail box installations.

A planar mirror with a reflective surface shall be located on the left side of the vehicle. The entire reflective surface shall be visible through the windshield. The mirror shall be positioned such that the left side of the vehicle aft of the rear axle is visible in the mirror. The mirror shall be placed as high as practicable. The left side mirror shall be mounted at a height that does not conflict with and can overlap the right side mirror of an identical vehicle when parked side by side without causing damage.

A convex mirror with a reflective surface high shall be placed not more than 5.1 cm (2 in.) below the left-side planar mirror.

3.15.14.4 **Mounting** – The mirror mountings shall provide a firm support for all mirrors with minimal vibration. Lateral vision mirrors shall be mounted in an overhang configuration with a spring loaded detent mechanism that allows for variable detent angles and a breakaway hinge.

Vertical adjustment of mirror location on the mount shall also be possible. The mirrors and mountings shall be free of sharp points or edges that could contribute to pedestrian or driver injury. Lateral planar mirrors shall be mounted to minimize direct vision impairment.

3.15.15 Cab Accessories

Accessories shall be the manufacturer's standard, except as specified herein, and shall include, but not be limited to, an automotive-type horn, 12-volt power port.

3.16 Painting

3.16.1 Preparation for Painting

All paint shall be applied to properly prepared surfaces in accordance with best manufacturing practices. The final finish shall be free from sags, runs, and orange peel effect.

3.16.2 Interior Painting –

N/A.

3.16.3 Exterior Painting

All exterior finishes shall be the manufacturer's standard paint using the following enamel colors:

a. White Polyurethane - Except for the underside of the vehicle, including the front and rear wheel wells, the exterior shall be painted white, in accordance with color chip number 17773 of FED- STD-595. Paint samples shall be provided for approval prior to the first article inspection.

b. Black Polyurethane - The under portion of the vehicle, i.e., chassis frame, axles, wheels, etc., shall be painted black with the manufacturer's highest quality standard paint, dipped or powder coated according to SAE J2334. Paint samples shall be provided for approval prior to the first article inspection.

All exterior painting shall be warranted against corrosion, peeling, chipping, flaking for 5 years.

3.17 Markings

Vehicle markings shall be as specified herein. Final location of all markings will be determined at Prototype inspection. All decals shall be supplied by Lowen Color Graphics.

Lowen Color Graphics point of contact:

ATTN: Customer Services Representative
P O Box 1528
Hutchinson, KS 67504-1528
(800) 835-2365

3.17.1 Interior Markings

Unless otherwise specified, interior decals shall be of the vinyl type, silk-screen process, with a pressure-sensitive adhesive backing.

3.17.1.1 Data Plate – The data plate shall consist of a metal or plastic plate indicating the name of the manufacturer, vehicle type, year and model number, USPS order number, USPS vehicle number, VIN, and warranty expiration date (month, day, and year). The vehicle dimensions shall include overall height, width, length, and the GVWR shall be permanently attached to the vehicle. The location of data plate shall be determined at the Prototype inspection. Data shall be permanently and legibly inscribed on the plate.

3.17.1.2 Safety Decal – A decal approximately 20 cm by 8 cm (8 inches by 3 inches) showing the safety check to be made before operating the vehicle shall be affixed to a prominent location clearly visible to the driver. Descriptive wording for the safety decal shall be furnished by the CO at the Prototype inspection.

3.17.1.3 Warning Decal – A decal containing the legend "Avoid Backing On Route" in 2.5 cm (1-inch) high lettering shall be affixed to the dashboard in clear sight of the driver.

3.17.2 Exterior Markings

Except as otherwise indicated, exterior markings, i.e., the USPS emblem shall be manufactured of reflective sheeting in accordance with USPS-S-1087. Decal material shall be 3M 690 series (or equal) not be more than 6 months old at the time of installation.

3.17.2.1 Beltline – A 13 cm (5-inch) wide, three-color beltline consisting of a 5.1 cm (2-inch) wide upper band of Red Pantone 485C, a 2.54 cm (1inch) wide middle band of white, and a 5.1 cm (2 inch) wide lower band of Blue Pantone 294C shall encircle the vehicle, except for the area across the front of the vehicle. This beltline shall be located below the side door windows and shall be of reflective sheeting material conforming to USPS-S-1087. The white band shall be color matched as near as practicable to the white paint specified herein.

3.17.2.2 Official Emblem, Side – A forward facing, 60 cm (23.5”) high decal of the USPS corporate logo is to be installed on each side of the vehicle. The trademark or service mark notice required by statute shall be affixed to or incorporated in the decal. The required reflective "R" shall be 6 mm +2 mm in diameter (0.25 +0.06 inch), shall have a Postal Service Blue Pantone 294C on white background, and shall be located in the lower right-hand corner of the decal 3 mm inboard (0.125 inch) from the other band. The decals shall be of reflective material conforming to USPS-S-1087. Installation location of all decal will be determined at Prototype inspection. Sheeting material shall not be more than six months old at the time of installation and identified in a manner consistent with the referenced specification.

3.17.2.3 Official Emblem, Rear – A right facing, 50.3 cm (19 7/8") high decal of the USPS corporate logo is to be installed on the rear door of the vehicle. A reflective decal shall be positioned on the rear of the vehicle. Installation location of all decal will be determined at Prototype inspection. The decals shall be in white and Blue Pantone 294C and shall be of reflective material conforming to USPS-S-1087. Sheeting material shall not be more than six months old at the time of installation and identified in a manner consistent with the referenced specification.

3.17.2.4 Vehicle Number – Decals 7.6 cm (3 inches) in height depicting the 7-digit Postal Service Vehicle number shall be centered and affixed to the front and rear roof crown. The decals shall be in Blue Pantone 294C and shall be of reflective material conforming to USPS-S- 1087.

3.17.2.5 Service Mark Notice – N/A

3.17.2.6 Corporate Markings – No external manufacturer's corporate marking or model identification are permitted.

3.18 Workmanship

Workmanship on the vehicle, and on all components and elements of the vehicle, shall be of the best level of quality represented by vehicles currently being produced by the industry for sale to the public. This requirement shall apply to, but not be limited by, the following statement of specific elements of construction.

3.18.1 Metal

All metal stock under this specification shall be free from kinks and bends. The bending, shaping, or straightening of material shall not weaken or otherwise damage the metal. Shearing and snipping shall be neat and accurate. The required sizes and shapes obtained from bending, or ending in sharp edges, shall be contoured smooth.

3.18.1.1 Metal Reinforcements – Metal reinforcements shall be provided for the body metal at all points of attachment for accessories (mirrors, hood latches, etc.), to ensure structural integrity and minimize failure from vibration, stress, or fatigue.

3.18.2 Bolted and Riveted Connections

Bolt and rivet holes shall be punched or drilled to ensure accurate alignment and shall have all burrs removed. Washers, lock washers, or locknuts shall be provided in accordance with good commercial practice and all bolts, screws, and nuts shall be fastened securely. Rivets shall be uniform for each size and shall be full, neatly made, concentric with rivet holes, and in full contact with the surface of the riveted material.

3.18.3 Welding

Types of welds used shall be in accordance with good commercial practices. All welds shall be made in compliance with the Welding Handbooks of the American Welding Society. The surfaces of parts to be welded shall be free from corrosion, scale, paint, grease, or other foreign matter. Weld penetration shall provide for maximum design stress without failure throughout the base metal junction.

3.18.4 Castings

Castings shall be free from patching, misplaced coring, warping, or other defects that might render the casting unsound for use.

3.18.5 Miscellaneous

Stud and bolt ends shall not be left exposed more than 3 mm (0.125 inch) in any area where personnel may move in and about the vehicle in normal operation.

3.19 Test Vehicles

To be Determined (TBD)

3.20 Drawings

The successful supplier shall furnish five sets of dimensioned outline drawings of the vehicle labeled in both the English and metric systems sixty (60) days prior to Prototype inspection. Two sets of drawings shall be marked to indicate the contractor's proposed location of the beltline, decals, exterior and interior markings. The CO shall return one set of drawings to the successful supplier within 15 days after receipt indicating acceptance of the contractor's proposed selection of location of these items or specifying changes as required. The contractor will furnish four sets of corrected and updated Prototype drawings to the Contracting Officer within ten (10) days of the Prototype acceptance.

3.21 Technical Publications

The contractor shall furnish all service, parts, flat rate information, manuals, and updated technical information on a master CD-ROM and a dedicated web site accessible by USPS Vehicle Maintenance Facilities and authorized dealerships. The CD-ROM shall not include executable files. All information furnished is to be specifically written for the vehicle provided. No generic information may be provided. For the expected life of the vehicles, manuals and technical publications shall be updated, revised, or changed on an annual basis or when required due to major vehicle modification or component reconfiguration.

3.21.1 Service Information

The Service Information shall be sufficiently detailed to enable repair of all serviceable components by maintenance personnel. The Service Information shall provide separate coverage for each major system of the vehicle. Each section shall include repair and overhaul procedures as well as complete diagnostic test and procedures, where applicable. Standard automotive industry usage of terms and manual content shall prevail. In addition, the organization of the sections describing the major systems of the vehicle shall correspond to sections in the Parts Information for ready reference.

3.21.2 Proprietary Diagnostic Equipment

All rights to proprietary diagnostic data typically made available to franchise dealers for the purpose of vehicle performance diagnosis shall be made available to the USPS. These rights shall be transferable to companies under contract with the USPS for the sole purpose of developing diagnostic equipment for use by postal employees on postal-owned vehicles.

3.21.3 Parts Information

The Parts Information shall include a complete listing of all serviceable parts by the Supplier's part number. The parts are to be provided in the same section order as the Service Information for each major system. Standard automotive industry usage of terms shall prevail in nomenclature description of parts. All vehicle part numbers are to be cross referenced to their appropriate Vehicle Maintenance reporting Standards component number.

3.22 Flat Rate Information

The Flat Rate Information shall provide times recommended for servicing of components and assemblies, including body repair and paint application. The time shall be measured by the supplier and form a realistic basis for assessing standardized efforts in a repair or overhaul procedure. Times shall be presented for all service procedures and such procedures shall be consistent with service procedures described and illustrated in the Service Information. The USPS reserves the right to audit and verify flat rate time data.

3.23 Operator Instructions Manual

The Operator Instructions Manual shall contain a complete description of the vehicle, driving instructions, maintenance intervals, and warnings. Operator instruction manuals shall be updated, revised, or changed on an annual basis or when required due to vehicle modification or major component reconfiguration as governed by the U.S. Tread Act. No generic information may be provided. One paper-bound copy per vehicle shall be provided for the initial release; subsequent updates shall be provided on a master CD- ROM.

3.24 Warranty

The supplier shall warrant the vehicle, and all parts thereof, to be free from defective material and workmanship for a period of not less than 5 years from date of acceptance, or 80,467 km (50,000 miles) road travel, whichever occurs first. Additionally, the supplier shall warrant specific parts, components, assemblies, and subassemblies (i.e., power train, alternator, etc.) to equal the warranty advertised and provided to the general public on such items. On vehicles procured free on board (f.o.b.) destination and delivered by drive-away method, the 80,467 km (50,000 miles) guarantee limitation shall be in addition to the mileage accumulated by such drive-away method. On vehicles used within the 50 states of the United States and the District of Columbia, the warranty shall include the furnishing, without cost to the USPS, the f.o.b. supplier's nearest dealer or branch, or to the original destination; if desired by the USPS, of new parts and assemblies to replace any that prove to be defective within the warranty period. In addition, when the USPS elects to have the work performed by the supplier, the cost of the labor involved in the replacement of the defective parts or assemblies at the supplier's plant, branch, or dealer facility, shall be borne by the supplier. On vehicles used outside the 50 states of the United States and the District of Columbia, the warranty shall include the furnishing of new parts or assemblies that shall be delivered by the supplier to the port of embarkation in the United States designated by the USPS.

The USPS reserves the right to make repairs and be reimbursed by the supplier at a rate consistent with the current USPS labor rate in effect at the time of the repair for labor based on the manufacturer's flat rate time schedule and the cost for parts. Where warranty is performed at a commercial garage because a supplier or USPS facility is not available to perform the repair, the actual cost of the parts and the actual cost of the labor shall be billed to the supplier.

USPS Vehicle Maintenance Facilities (VMFs) shall be given authorized dealer status for the purpose of submitting warranty claims. Claims submittal shall be performed through an electronic data transfer from the VMFs to the supplier and/or the supplier’s first tier subcontractors. One process shall be incorporated for all components regardless of their origin. All software and any necessary hardware must be compatible with USPS equipment.

Reimbursement for warranty must be made to the individual VMF initiating the claim. Warranty claims may also be submitted using a third party processor designated by the USPS. Suppliers must accept claims from third party providers and reimbursement must be made to individual VMF finance numbers.

In addition to the supplier’s standard product warranty, the vehicles procured by this specification shall be warranted against surface deterioration such as, but not limited to, gel coat cracking, delaminating or water leaks. The supplier and or, their subcontractor shall ensure that the materials used are applied correctly. The supplier waives any immediate notice of defects and shall respond to the U.S. Postal Service within a reasonable period by detailing their course of action to correct defects.

In addition to the above, if the supplier is not the original equipment manufacturer, then it

must ensure, by written agreement between it and the original equipment manufacturer, that the original equipment manufacturer's warranty continues to apply to the vehicles.

4 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the USPS. The USPS reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure that supplies and services conform to the prescribed requirements.

4.2 Quality Control Procedure

The contractor shall be required to provide USPS representatives access to his plant and to all operations concerned with the manufacture, fabrication, evaluation, etc., of parts and components of the vehicle. Instruments, working space, physical assistance, etc., as may be required by the USPS, shall be provided by the contractor as needed.

4.3 Classification of Inspections

The inspection requirements specified herein are classified as follows:

a. Prototype Vehicle Inspection (see 4.4)

b. Quality Conformance Inspection (see 4.5)

4.4 Prototype Vehicle Inspection

4.4.1 Examination

The Prototype vehicle shall be examined in accordance with Table 4-1. The "X" indicates the examination to be performed. The presence of one or more defects shall be cause for rejection.

4.4.2 Tests

The Prototype vehicle shall be tested in accordance with Table 4-2. The "X" indicates the tests to be performed.

4.5 Quality Conformance Inspection

The contractor shall furnish the USPS copies of his inspection records showing that the Prototype has been inspected and tested, and conforms in all respects to the requirements of the contract. Such inspection records shall be full and complete and be furnished to the USPS prior to the start of the inspection of the first- article vehicle.

4.5.1 Examination Schedule

The Prototype vehicle shall be examined in accordance with Table 4-1 to determine conformance to the requirements of the specification, using test procedures consistent with those employed during first-article testing. The "X" indicates the examination to be performed. The presence of one or more defects shall be cause for rejection.

4.5.2 Test Schedule

Tests shall be in accordance with Test Schedule Table 4-2. Failure to successfully pass any test shall be cause for rejection.

Table 4-1. Examination Schedule

Technical Proposal Vehicle	Proto-type	Quality Conformance	Defect	Requirement Paragraph(s)
X	X	X	Vehicle Design not as specified	3.1, 3.5
X	X	X	Environmental Protection not as specified.	3.4.9.1, 3.4.9.2
X	X	X	Materials not as specified.	3.3, 3.3.1, 3.5.2, 3.5.3
X	X	X	Frame not as specified	
X	X	X	Vehicle weights and dimensions not as specified	3.4.7.1, 3.4.7.4
X	X	X	Powertrain not as specified	3.6.2.1
X	X	X	Powertrain components not as specified	3.6.2.2 to 3.6.2.5
X	X	X	Transmission not as specified	3.6.3, 3.6.3
X	X	X	Axles not as specified	3.6.3.2
X	X	X	Suspension system not as specified	3.6.4 to 3.6.4.2
X	X	X	Service brakes not as specified	3.6.5.1
X	X	X	Parking brake not as specified	3.6.5.2
X	X	X	Wheels and tires not as specified	3.6.6.1 to 3.6.6.4
X	X	X	Electrical system not as specified	3.6.7 to 3.6.7.5
X	X	X	Lighting equipment not as specified	3.6.8 to 3.6.8.6
X	X	X	Radio interference suppression not as specified	3.6.9
X	X	X	Cab and body components not as specified	3.7.1 to 3.7.4, 3.7.6 to 3.7.8, 3.8.5, 3.8.6, 3.11, 3.13.1 to 3.13.3
X	X	X	Body and chassis protective components not as specified	3.7.5, to 3.7.8
X	X	X	Seats and seat restraints not as specified	3.8.1 to 3.8.4
X	X	X	Steering system not as specified	3.9
X	X	X	Visibility requirements not as specified	3.12 to 3.12.6
X	X	X	Instruments and controls not as specified	3.14, 3.14.1
X	X	X	Accessories not as specified	3.15.1 to 3.15.14.4. 3.15.16
X	X	X	Mirrors not as specified	3.15.15 to
X	X	X	Painting not as specified	3.16.1 to 3.16.3
X	X	X	Marking not as specified	3.17 to 3.17.2.6
X	X	X	Workmanship not as specified	3.18 to 3.18.5

Table 4-2. Test Schedule

Technical Proposal Vehicle	Proto-type	Quality Conformance	Order	Test	Test Paragraph	Requirement Paragraph(s)
X	X	X	-	Test conditions	4.7.1	-
X	X	X	1	Road test	4.7.2	3.4.2, 3.4.3, 3.6.1, 3.6.7.1, 3.6.2.2, 3.6.3, 3.6.5.1, 3.9
X	X	X	2	Start and stop operation test	4.7.3	3.4.4, 3.6.1, 3.6.7.1, 3.6.2.4, 3.6.3, 3.6.4, 3.6.5.1
X	X	X	3	Parking brake holding test	4.7.4.1	3.4.5, 3.6.5.2
X	X	X	4	Service brake test	4.7.4.2	3.4.5, 3.4.5, 3.6.5.1
X	X	X	5	Acceleration test	4.7.5	3.4.2
X	X	X	6	Gradeability test	4.7.6	3.4.4
X	X	X	7	Clearance circle test	4.7.7	3.4.6
X	X	X	8	Towed vehicle/ wrecker attachment test	4.7.8	3.5.4
X	X	X	9	Tire chain clearance test	4.7.9	3.6.6.3
X	X	X	10	Jacking test	4.7.10	3.7.5
X	X	X	11	Bumper impact test	4.7.11	3.7.5
X	X	X	12	Side door/ partition tests	4.7.12	3.13.1, 3.13.1.1
X	X	X	13	Heater/ defroster test	4.7.13	3.15.1
X	X	X	14	Water spray test	4.7.14	3.7.1, 3.13.1, 3.13.2

4.6 Examination Procedure

Failure of a vehicle to meet any requirement specified herein as a result of the quality conformance examination, and tests specified in Tables 4-1 and 4-2, shall be cause for rejection of all production vehicles and refusal by the USPS to continue acceptance of production vehicles, until evidence has been provided by the contractors that corrective action has been taken to eliminate the deficiencies. Correction of such deficiencies on vehicles previously produced, delivered, and accepted shall be accomplished by the contractor at no cost to the USPS in accordance with the provisions of the warranty clause (see 3.24).

4.7 Test Procedure

4.7.1 Test Conditions

Unless otherwise specified, tests shall be performed without shelter and at the climatic conditions existing at the place of test. The vehicle shall be uniformly loaded to its rated payload capacity and full complement of fuel, lubricant, and coolant, plus a driver and one passenger equivalent with a combined weight of at least 181.4 kg (400 lbs) for all tests. The vehicle shall operate as specified herein without maintenance other than the

contractor's recommended normal scheduled maintenance, as established by a maintenance schedule prepared and submitted by the contractor and approved by the USPS prior to the test. For the purpose of these tests, the Supplier/Contractor shall be responsible for the delivery of the vehicles to a test site that shall offer essential traffic and highway terrain features and other facilities necessary for the conduct of all tests specified herein. Further, the Supplier/Contractor shall provide, at the designated test site, a sheltered work area and such instrumentation, tools, shop equipment (including a vehicle hoist), physical assistance, and technical data as may be required to conduct this test.

4.7.2 Road Test

The vehicle shall be driven a sufficient distance by a USPS representative to determine its operating and handling characteristics. Driving shall include operation of the vehicle with and without payload in both urban and rural environments, and at legal and safe speeds up to and including 104.6 km/hr per hour (65 mph). Travel shall be over roadway surfaces varying from primary (excellently maintained) highways to secondary (poorly maintained) roads. The vehicle shall be closely observed for ease of handling and general road worthiness, i.e., stability, undesirable sway tendency, off-tracking, acceleration, deceleration (including braking), etc. Cause for rejection of the vehicle shall include evidence of poor handling qualities of road worthiness characteristics, or failure of the vehicle to maintain safety a speed of 104.6 km/h (65 mph) on a 0 to 0.3 percent grade, or 72.4 Km/hr (45 mph) on a 0.3 to 2.5 percent grade.

4.7.3 Start and Stop Operation Test

The vehicle shall make a minimum of 25 consecutive stops from a speed of 56.3 Km/h (35 mph). The deceleration rate of these stops shall be 2.44 km/per second/second (8 feet per second/second) and the acceleration rate to 56.3 Km/h (35 mph) shall be the maximum for the vehicle. The cycle shall be repeated without delay until the total number of stops is completed. Any indication of excessive engine /transmission heat, appreciable brake fade or other discernible malfunctions shall be cause for rejection of the vehicle.

4.7.4 Brake Tests

4.7.4.1 Parking Brake Holding Test – The parking (hand) brake shall be tested to demonstrate its adequacy to hold the vehicle on a 20 percent grade, with the transmission parking mechanism disengaged for a period of not less than 5 minutes. The parking brake shall be tested in both the ascending and descending attitudes. Failure of the parking brake to hold the vehicle securely in either the ascending or descending attitude shall be cause for rejection of the vehicle.

4.7.4.2 Service Brake Emergency Stopping Test – The service brake system shall be tested to demonstrate its capability to stop the vehicle adequately and safely under an emergency (panic) stop condition. The test shall be conducted on a reasonably level, dry, asphalt or concrete road surface free from loose material. The vehicle shall be subjected to two emergency (panic) type stops from a speed of 32.2 km/h (20 mph). Failure of the vehicle to stop within 7.6m (25 feet) or failure of the vehicle to make a safe, controlled stop within a 3.0 m (10 feet) lane during each test, or any indication of excessive pedal pressure, appreciable brake fade, or malfunction of the service brake system, shall be cause for rejection of the vehicle. Brake linings shall be subject to visual inspection after test.

4.7.4.3 Dual Master Cylinder Test – The service brake system shall be tested to demonstrate the effectiveness of the dual master cylinder. The test shall be conducted on reasonably level, dry, asphalt or concrete road surface, free from loose material. With only one- half of the dual master cylinder disconnected, the vehicle shall be driven at a speed of 32.2 km/h (20 mph) and the service brake applied. The same test shall be performed with only the other half of the dual master cylinder disconnected. Failure of the vehicle to

stop in a safe manner within 18.3 m (60 feet) under either condition shall be cause for rejection of the vehicle.

4.7.5 Acceleration Tests

The vehicle shall be tested to demonstrate its ability to accelerate from a speed of 0 to 104.6 km/h (65 mph) within an allotted time of 35 seconds, to accelerate from 0 to 80.5 km/h (50 mph) within an allotted time of 27 seconds, and to accelerate from 0 to 24.1 km/h (15 mph) within an allotted time of 5 seconds. Inability of the vehicle to meet this requirement shall constitute failure of this test.

4.7.6 Gradeability Tests

The vehicle shall be tested to demonstrate its ability to stop on and ascend a 20 percent grade in low gear. The test shall be performed on dry, asphalt, or concrete road surface free from loose material having a predetermined grade of not less than 20 percent. The vehicle shall be tested in both forward and reverse drives. Failure of the vehicle to stop on and ascend the grade in either forward or reverse drives shall be cause for rejection of the vehicle.

4.7.7 Clearance Circle Test

The vehicle shall be operated to determine the vehicle clearance circle diameter in both directions. Failure of the vehicle to turn within a vehicle clearance circle of 14.4 m (44') Curb to Curb shall be cause for rejection of the vehicle.

4.7.8 Tire Chain Clearance Test

The vehicle, with both side doors closed, shall be tested to determine that it can be used safely when equipped with tire chains on the drive wheels. With both drive wheels equipped with heavy-duty, cross-link type tire chains, compress the spring on the left drive wheel so that the axle is in contact with the left drive wheel axle stop and the right spring is allowed to hang free. Jack up the vehicle by the appropriate bumper until both drive wheels are completely free of ground contact.

This test shall be repeated with the right drive wheel spring compressed and the left spring allowed to hang free. Operate the vehicle at a speedometer indicated speed of 32.2 km/h (20 mph). Any indication of tire chain to body metal contact during either test shall be cause for rejection of the vehicle. SAE J683 shall be used in accordance with this test.

4.7.9 Jacking Test

The vehicle shall be tested to demonstrate its ability to withstand the stresses on the jacking points and supports and braces, and associated vehicle components during maintenance servicing operations. The vehicle shall be alternately jacked up at each Jacking/lifting point until the full weight of the vehicle at the lift point is supported by the jack. Any indication of frame twisting that results in binding of the side doors or any evidence of deformation of the lift point structure, or frame and body member that results in a permanent set in such components or members shall be cause for rejection of the vehicle.

4.7.10 Bumper Impact Tests

The front and rear bumpers shall be tested to demonstrate their ability to withstand impacts associated with terminal and docking operations. The vehicle shall be impacted against a fixed barrier, or other immovable object, at a sustained speed of 3.2 km/h (2 mph) at a 30˚ angle to the vehicle center-line, such that the right outboard face of the front bumper is the first point of contact with the barrier. The same test shall be repeated for the left outboard face of the front bumper and the right and left outboard faces of the rear bumper. These tests shall be followed by impacts into a fixed collision barrier that is

perpendicular to the line of travel of the vehicle, while traveling longitudinally forward, then longitudinally rearward, at 8 km/hr (5 mph). At the onset of all barrier impacts, the vehicle is operating at idling speed in accordance with the manufacturer's specifications and the vehicle is loaded to its full GVW. Upon completion of each test, the vehicle shall be visually inspected for damage. Any evidence of vehicle damage, including damage to the bumper (with exception for cosmetic damage), bumper supports and braces, chassis members, or body paneling, shall be cause for rejection of the vehicle.

4.7.11 Side Door and Partition Door Tests

The right and left side sliding doors, and the sliding door on the protective partition (see 3.7.7), shall be tested to demonstrate ease of opening and closing. With the vehicle positioned on the level, the right and left sliding doors and partition sliding door shall be closed and opened (excluding the latch action) utilizing a spring gauge. A force in excess of 8.2 kg (19 lbs.) to open or close any of these doors shall constitute failure of this test.

4.7.12 Heater and Defroster Tests

The heater and defroster system shall be tested to demonstrate the ability to provide a minimum of 10,080 kcal/hr (40,000 Btu/hr) of the heat after operating temperatures have been achieved. The heater shall be tested to the standards required in SAE J638 Motor Vehicle Heater Test Procedure. The defroster system shall be tested to demonstrate its ability to conform to the standards required in SAE J381 Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles. Failure of the heater and defroster system to meet the specified requirements shall be cause for rejection of the vehicle.

4.7.13 Water Spray Test

The vehicle shall be subjected to a water spray test to simulate a hard driving rain. Water shall be impinged on the vehicle from the top at an angle of approximately 45˚ to the horizontal, and at a rate equivalent to at least 7.6 cm (3 inches) of water per hour. Each surface, i.e., front, rear, right side, left side, and undercarriage, shall be exposed simultaneously to this simulated rainfall for at least 10 minutes. Any leakage of water into the interior of the vehicle, or any indication of malfunctioning of the vehicle's electrical and ignition system, shall constitute failure of this test.

5 PREPARATION FOR DELIVERY

5.1 Delivery

Delivery of the vehicles shall be made in such a manner as to permit immediate operation. No vehicles other than the Prototype vehicle for the quality conformance shall be driven or towed more than 80.5km (50 miles) prior to delivery to the USPS, regardless of whether delivery is made to the USPS at the contractor's plant or to destinations designated by the CO. Under no circumstances shall these vehicles be used to tow, carry, or push other vehicles or cargo of any kind.

5.2 Marking for Shipment

N/A

6 NOTES

6.1 Intended Use

These vehicles shall be used on multi-stop delivery, relay, collection, and parcel post routes. They will be operated in all weather conditions found in the United States. These vehicles shall be operated over hilly terrain, semi-improved roads, as well as city streets, and make as many as 600 starts and stops per day to deliver letter mail, parcel post,

relays, and to collect mail from street letter boxes in addition to stops and starts required by traffic conditions. The operator may dismount and remount, turn the engine on and off, and lock and unlock the vehicle up to 200 times during these stops and starts. During such low speed operations as to which these vehicles will be subjected, including rapid accelerations and decelerations and prolonged idling, special attention must be paid to engine and transmission cooling. Further special attention must be paid to headlight and flasher longevity as these vehicle components are subjected to cycles rarely met in non-commercial applications.

6.2 Ordering Data

Procurement documents should specify the following:

a. Title, number, and date of this specification

b. Quantity and destination of vehicles required

c. Time frame required for submission of Prototype

d. Certification documentation to be provided

e. Number of full-size spare wheels and tires required to include shipping instructions and destinations

f. Number of companion seats required and destinations for shipment

g. Certified copy of heater and defroster test data

h. Time frame for submission of drawings

i. Number of manuals/CD ROM information required and destinations for shipment

j. Destinations for parts manual and technical service bulletin updates

6.3 Certification of Compliance with Specification

The supplier shall certify that the vehicle, component units, and parts shall be suitable for work to be performed; will be constructed to definite standard dimensions with proper clearance and fits; that previously published or set ratings will not arbitrarily be changed without prior approval of the manufacturer of the actual unit; and further, that the vehicle offered shall comply in every respect with the terms of this specification. In the event that the vehicle offered does not fully comply with this specification, the supplier shall state definitely, referring to the proper paragraph(s) of this specification wherein the vehicle he proposes to furnish does not comply. Where no statement is received, the successful supplier shall be required to meet every requirement of this specification.

6.4 Repair Parts and Service

As the continuous operation of the vehicle is of utmost importance, it is necessary that the successful supplier be in a position to render prompt service and to furnish replacement parts for the expected life of vehicle from date of manufacture. Additionally, all parts manual and technical service bulletin updates issued over the same period must be provided in hard copy format immediately upon issue of the update. This information must also be made available on the manufacturer's website. Suppliers shall indicate the extent of their ability to render prompt service by furnishing a list of branch offices or agencies where complete stocks of repair parts are maintained and can be secured within a reasonable time after ordering, by furnishing a part number from the parts book, and at such discounts as may be quoted from year to year by the manufacturer of vehicles purchased under this specification.

6.5 Loading

When shipment is to be made by rail, water, or truck, the vehicle shall be prepared and loaded for shipment in accordance with the best commercial practice. When shipment is to be made by rail on Government Bills of Lading, freight cars shall be loaded so that the USPS shall obtain the most advantageous freight rates. In accordance with this requirement and the data furnished by the supplier, the number of vehicles stated shall be loaded into a railroad car, vessel or truck of the designated type and size, and the stated shipping weight shall not exceed the actual shipping weight, unless changes are specifically authorized by the CO.

6.6 Service Prior to Loading

Servicing prior to loading shall be required and shall include the following: focusing of lights; proper functioning of the electrical system; filling and charging of battery; proper alignment of front wheels; inflation of all tires; and complete lubrication of chassis, engine and all running gear, with suitable high quality lubricant of the proper grade for the ambient temperature at the delivery point. Unless regulations prohibit, the crankcase, transmission, and differential as applicable shall be filled to the operating level with high quality lubricating oil of the correct type and viscosity for the "run-in" period as recommended by the manufacturer, and fuel tank shall be filled with sufficient fuel to drive the vehicle a distance of at least 40.2 Km (25 miles). In addition, the cooling system shall be filled with the OEMs recommended coolant.

Servicing for Driveaway Delivery – When driveaway delivery is specified in the invitation for bid, the Contractor shall perform all of the servicing operations specified in 6.6.

6.7 Questionnaire

The successful supplier shall furnish a completed USPS Vehicle Data Questionnaire PS Form 1534, in electronic form within ten days after award of contract. In addition, an updated version of PS Form 1534 will be required ten (10) days after approval of the Prototype vehicle inspection. Blank copies of this questionnaire form shall be furnished by the CO.

6.8 Supplier Furnished Documents

Copies of the documents listed below shall be supplied to the Contracting Officer's Technical Representative ten (10) days prior to the Prototype Vehicle Inspection, and shall be sent to the following address:

UNITED STATES POSTAL SERVICE ENGINEERING
8403 Lee Highway
Merrifield. VA 22082-8101
Attn.: Han Dinh

a. FTP-75 and HFET Testing Results
b. Certification and Testing Results
c. Outline Drawings
d. Operator's Instructions Manual
e. USPS Data Questionnaire PS Form 1534